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THE JOURNAL

OF THE

American Medical Association

Annual Subscription, $5.00 — PUBLISHED WEEKLY — Single Copies, 20 Cents

VOLUME 85, No. 22 — 535 North Dearborn Street, CHICAGO, ILL. — NOVEMBER 28, 1925

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NEXT ANNUAL SESSION, DALLAS, TEXAS, APRIL 19-23, 1926.

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The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 85, No. 22 CHICAGO, ILLINOIS NOVEMBER 28, 1925

THE CUTANEOUS NEUROSES

WITH PARTICULAR REFERENCE TO PSYCHOTHERAPY *

JOSEPH V. KLAUDER M.D.

PHILADELPHIA

The symptoms of the psychoneuroses are legion and are manifested in all branches in medicine. The well established form of treatment, namely, psychotherapy, is a valuable agent in the hands of all physicians practicing medicine. The psychologic phase of certain skin diseases should not be neglected in treatment. It appears, however, that little attention has been given to psychotherapy in dermatology.

The application of medical psychology may be of considerable value in the treatment of certain skin diseases, objectively as well as subjectively manifested. A psychic cause of such common skin diseases as pruritus and urticaria should be included among the many causes of these diseases, although textbooks on dermatology make little or no mention of a psychic cause of pruritus and no mention of psychotherapy in these diseases.

THE RÔLE OF SUGGESTION IN THE CAUSATION OF CUTANEOUS PHENOMENA

In a consideration of the psychogenic skin manifestations, reference should be made to the many reported instances which clearly set forth the rôle that suggestion plays in the causation of cutaneous phenomena. The following will serve as examples of this group:

Mabille [1] suggested to a hypnotized man that a quarter of an hour after he should awake the letter V would appear at a spot on his forearm, which he marked with a pencil, and that this letter would bleed. The phenomena promptly appeared at the time and in the place suggested.

Focachon [2] applied a postage stamp to the left shoulder of a hypnotized subject, and kept it in place with ordinary sticking plaster and a bandage. He suggested to the patient that he had applied a blister. The patient was carefully watched for twenty-four hours at which time the bandage, which had been untouched, was removed. The skin under the postage stamp was thickened, necrotic, of a yellowish white color and puffy, contained serum and leukocytes, and was surrounded by an intensely red zone of inflammation. Several physicians confirmed this observation.

Dumontpallier [3] repeated the experiments of Focachon on several patients and obtained similar results. Charcot [4] and also Edwards [4] record the production, by suggestion alone, of patches of dermatitis resembling burns on the skin of hypnotized patients. The blisters in these ecchymoses by suggestion are similar to the case reported by Brown-Séquard,[4] in which a mother, seeing a window frame suddenly fall on her child, showed immediately afterward a large ecchymosis on the corresponding part of her arm.

Suggestion and autosuggestion may play a part in the causation of itching. The desire to scratch is contagious, and psychic impression may alone suffice to initiate the sensation of itching.[5] This is exemplified in the occurrence of itching among medical students on the occasion of presenting a patient with a severely pruritic skin disease who in addition actually to scratching the skin goes through all the coarse jerking movements with elevation and rotation of the shoulders, which implies a "creepy" sensation on the part of the patient.

Bronson [6] discusses the autosuggestibility of itching in the following way: "Let any one sit quietly for a moment, fixing attention on the skin, and the chances are that sooner or later he will become conscious of a slight intrusive irritation at some point, a pinching or picking sensation, and the longer it lasts the more it demands attention." Although the itching brought on by psychic impression is transitory, nevertheless it shows how by mental representation the sensation of itching may be produced. In this regard, Du Bois [7] can appropriately be quoted: "A mental representation is already a sensation." It is perhaps possible that such mental representation may subsequently form the psychogenesis of itching that has become an obsession. Furthermore, it shows the baneful rôle of psychic fixation on the skin, which is sometimes an important factor in the continuation of itching. This phase of itching and its treatment by psychotherapy will later be discussed.

PSYCHOGENIC TYPES OF PRURITUS AND URTICARIA

There are no two skin diseases which have more diverse causes than pruritus and urticaria, and in which, in order to establish the etiologic factor, more careful history, clinical examination and laboratory examination are required. Each case of pruritus or urticaria presents an individual problem in treatment. Proper treat-

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.

* Read before the Section on Dermatology and Syphilology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Mabille: Note sur les hemorrhagies cutanées par autosuggestion dans le sommeil provoguée, Progrès méd. **13**: 155, 1885.

2. Focachon, quoted by O'Malley, A., and Walsh, J. J.: Essays in Pastoral Medicine, 1906, p. 349.

3. Dumontpallier: De l'action vaso-motrice de la suggestion chez les hysteriques hynotisables, Compt. rend. Soc. de biol., Series 2, 1885, pp. 434-436.

4. Quoted by Van Harlingen, Arthur: Hysterical Neuroses of the Skin, Am. J. M. Sc. **114**: 64-79, 1897.

5. A patient recently informed me that each time she purchases a hat, which necessitates trying on a large number (which others have similarly done) before the desired one is obtained, a period of transitory itching of the scalp invariably follows.

6. Bronson: Sensation of Itching, Selected Monograph on Dermatology, New Sydenham Society, 1893, pp. 299-316.

7. Du Bois: Psychic Treatment of Nervous Diseases.

ment, of course, necessitates grouping the case into an etiologic category; local treatment is only symptomatic.

It is important in the treatment of these maladies to bear in mind the fact that they may be the cutaneous expression of a psychic reaction arising from variable causes, an anxiety state, or a result of a conflict of the emotions, comparable, perhaps, to the "sentiments d'incomplétude" of Pierre Janet[8] who styles it one of the manifestations of a general state of lowered psychologic tension.

Accordingly, the history of these patients should be taken with the aforementioned possibilities in mind; attention should particularly be directed at the circumstances associated with the onset of the pruritus or urticaria, the circumstances associated with its continuation, and its specificity referable to the time and place of its occurrence.[9] Indeed, these remarks pertain not only to pruritus or urticaria, but also to other cutaneous phenomena, as will later be shown. If a psychic origin of the complaint is suspected the patient may well benefit by the application, on the part of the physician, of the principles of Janet and of Dejerine. Psychotherapy is of considerable value in reconditioning the psychologic reaction, in producing a transformation of the mental attitude, in dispelling fear or dread, or in distracting the psychic fixation. This is accompanied by suggestion or more especially by reeducation. A full comprehension of the psychogenesis of the complaint is urged on the patient.

PRURITUS

Psychogenic pruritus is exemplified in the two following cases. The patients were successfully treated with psychotherapy.

CASE 1.—A boy, aged 12, complained of a localized pruritus involving the scrotum. A local examination was negative. In an endeavor to penetrate the possible psychogenesis of the complaint, the patient was carefully questioned as to its onset. It was elicited that the pruritus followed the bite of either a mosquito or some other insect, which he was not sure. Further interrogation brought out the significant fact that the patient's mind was confused as to the relation between the bite of the insect and the cause of the pruritus. Accordingly, a transformation of the mental attitude was forthwith begun. It required very little explanation to straighten the matter out in the patient's mind. The pruritus promptly disappeared without any further treatment.

CASE 2.—A man, a school teacher, was complaining of pruritus involving the upper trunk. Significant points in the history were these: its occurrence usually about 4 o'clock in the afternoon in the solitude of his room, and that frequently he anticipated its appearance by the application of an antipruritic proprietary medicament. A general physical examination was essentially negative, as was the urine and a blood chemistry study, the latter particularly in reference to blood sugar and uric acid. At first, conventional local antipruritic applications were prescribed and instructions issued relative to diet and exercise. He did not improve. Psychotherapy was forthwith begun. The possibility of the pruritus being psychogenic by virtue of its specificity as to time and place was explained to him together with its probable mechanism. Furthermore, the baneful influence of the use of the antipruritic applications in anticipation of the sensation of itching, through autosuggestion, was pointed out to him and he was accordingly advised to discontinue this practice. A modification of his daily routine in the late afternoon was instituted to facilitate the avoidance of psychic fixation by distraction. The baneful influence of psychic fixation on the skin was also explained to him. Following the foregoing the pruritus promptly disappeared and has not reappeared in the one and one-half years since that time.

The following case is a probable instance of pruritus symbolic of a mental conflict:

CASE 3.—In the case of a married woman, with generalized pruritus of some months' duration, the general physical examination was essentially negative as well as laboratory examinations. The pruritus was very recalcitrant to treatment. A psychogenic basis was sought by the following procedure: A detailed history was taken with particular reference to the events prior to the onset of the pruritus. After several prolonged conversations, in which the patient did most of the talking, it was elicited (through what was virtually free association) that the pruritus appeared soon after her suspicions relative to the alleged unfaithfulness of her husband. Furthermore, her narration concerned otherwise unsatisfactory marital relations. Soon after these conversations the patient moved to a distant city, and no opportunity was afforded for psychotherapy.

The pruritus in the foregoing case was in all probability symbolic of soul pain. In pruritus of this type it is possible that much may be accomplished by psychanalysis.

In all cases of pruritus in neurotic patients it is important to bear in mind the possibility that the symptom itching may be the outward expression of an unconscious irritation.

In another patient it was elicited that the pruritus, of one month's duration, first appeared very shortly after the death of his wife. The patient was emotionally unstable and below par generally, doubtless, as a result of the grief and anxiety incident to his bereavement. The pruritus in this case was regarded more as a fatigue neurosis than as a psychologic reaction arising from an anxiety state. Treatment here was directed at the former etiologic factor rather than with psychotherapeutic measures.

Appropriate mention may here be made of the patient mentioned by Hartzell.[11] "The author has knowledge of an instance in which the smoking of a strong cigar after dinner in the evening was invariably followed by pruritus of the anus lasting throughout the night." In the etiologic considerations of this case, a psychic origin should be considered for reasons already discussed; likewise with pruritus following bathing—bath pruritus. A complex connected with bathing might be suspected.

Senile pruritus, a most intractable form of pruritus, is frequently, I believe, a psychoneurotic symptom. Itching in many patients becomes an obsession. I have patients tell me very calmly, sitting quietly with the hands folded in their lap, that at that moment they have intolerable itching. An aged patient with impaired memory, soon after awakening from a three-hour sleep, implored the nurse to relieve the itching which, she added, had been most severe during the past three hours.

THE RÔLE OF PSYCHIC FIXATION IN PRURITUS

In a consideration of psychogenic pruritus it is important to note that pain may appear at the site of psychic fixation, and this also applies to itching; the former is

8. Janet, Pierre: Les obsessions et la psychasthénie, Paris **1**: 264, 488, 1903.

9. Of course, these circumstances do not necessarily connote a psychic origin of the pruritus or urticaria. For example, a generalized pruritus or localized pruritus of the palms appearing a few hours after an injection of arsphenamin is a toxicological reaction to arsenic (Klauder, J. V.: Clinical Aspects of Cutaneous Reactions After Arsphenamin, J. A. M. A. **82**: 933-939 [March 22] 1924). Again, the itching of scabies is invariably manifested soon after the patient gets into bed. The nonpsychogenic type of pruritus may be manifested only after the patient disrobes.

11. Hartzell, M. B.: Diseases of the Skin, Philadelphia, J. B. Lippincott Company, 1917, p. 627.

well exemplified by the topalgias of Blocq,[12] by which he designates a variety of monosymptomatic neurasthenia in which there is established a fixed pain in variable regions of the body but with an anatomic or physiologic delimitation. He regards the phenomenon as a clinical manifestation of a persistent sensitive image, analogous in the domain of the sensibilities to the fixed idea in the domain of the intelligence.

The foregoing serves to explain itching and other subjective sensations at the site of psychic fixation in dermatophobias and in other morbid states which will later be discussed. The present discussion concerns that type of patient in which there may occur a psychic diffusion of itching, the patient becoming obsessed with the symptom of itching.

Psychic diffusion of itching may be initiated by a localized pruritic skin disease. By psychic fixation and perhaps too by mental representation, the sensation of itching continues after a pruritic skin disease has been cured and the skin becomes objectively normal, as, for example, the continuation of itching after scabies or pediculosis. In such patients the itching obsession occupies most of the patient's time and thought and frequently incapacitates him. In these patients, psychotherapy directed at the psychic fixation by distraction is of considerable value. The following case is a further example:

CASE 4.—A patient referred for the treatment of postarsphenamin dermatitis had a generalized severely pruritic erythredemia which disappeared following treatment. The skin became objectively normal. The pruritus continued almost unabated and incapacitated him. He dreaded during the day the itching at night, and anticipated at night the itching of the forthcoming day. He read books on diseases of the skin and inquired whether the itching could not be attributed to parasites under the skin. He experimented with various diets. Obviously, his skin was the site of psychic fixation and the itching an obsession. As a means of distraction of the psychic fixation he was advised to resume work, and other measures were instituted toward this end. The patient's manner of living was directed. The itching eventually disappeared.

It is not alone sufficient in patients of this type to prescribe bromids and antipruritic medicaments, and to tell them to "take a journey and not to dwell on the itching."

Consideration should be given to the possible rôle of psychic fixation in the causation of localized pruritus, notably pruritus vulvae and pruritus ani.

URTICARIA

The mechanism that produces vascular dilatation giving rise to urticarial lesions is apparently set into motion through divers causes. It is well known that one of the causes is a psychic disturbance, such as fear, anger or shame. Hartzell[13] reports that a patient would become covered with urticarial lesions within five minutes after an interview with a stranger. In Schamberg's[14] patient a severe and protracted urticaria of nine months' duration followed the witnessing of the destruction of the patient's place of business by fire. Prolonged grief, anxiety and mental stress and strain of divers causes may likewise be the underlying factor. Hyde and Montgomery[15] aptly remark, "The widow must be made to set aside her heavy crape veil under which her urticaria plays."

Indeed, angioneurotic edema may arise following psychic disturbance. Jackson and Salisbury[16] record such an instance of a young woman who experienced an attack involving the hands and face as a result of anger. In certain types of psychogenic urticaria, of which Case 4 is an instance, much may be accomplished by psychotherapy, by reconditioning the psychic reaction, by dispelling fear or dread, perhaps, or by reeducative measures which will be shown later.

CASE 5.—A recently arrived convict at one of our state prisons experienced each day when he was locked in his cell at 5 o'clock in the afternoon (the prisoners were not confined to their cells throughout the day) a severe attack of urticaria. For this reason he came under my observation. I explained to him, in terms he could comprehend, the psychogenesis of his urticaria, which was a psychologic reaction to fear, the fear of being confined in his cell. It was explained to him that a somewhat analogous phenomenon was blushing, which was entirely within the volition of a person depending on the development of a mental poise against the occasions that gave rise to it. Finally, I told him that the cure of his urticaria in a large measure depended on the manner in which he would mentally adapt himself to his environment. I had two talks with him; the second talk was a reiteration of the foregoing, parts of which were paraphrased. Following these talks the urticaria rapidly disapeared. No other treatment was employed. He has since experienced only rare attacks.

Mention may be made of another patient recorded by Hartzell[13] in whom a furious outbreak of urticaria occurred every afternoon about 5 o'clock for more than five years. In the etiologic consideration of this case a psychic basis should be considered. If only from this point of view, the morbid reaction may have become a habit, though the initial cause may no longer be operative. Reeducation of the patient may be of value to overcome the inductility of the fear of an attack each afternoon at 5 o'clock.

Most textbooks stress anaphylaxis to food or other substances as a cause of chronic urticaria. Some authors state that it is very probable that urticaria is always due to anaphylaxis. Certainly, not in the majority of patients with chronic urticaria that I have studied was it possible to demonstrate an anaphylactic cause. In many patients the urticaria appears to be a true angioneurosis, in many cases an expression of a fatigue neurosis. The following case is an example and shows how reeducative measures may be helpful in treatment of this type:

CASE 6.—A widow, supporting herself and her family and endeavoring to educate her two children, taught school during the day, did housework on arriving home, and again taught at night school. She kept books on Saturday and did housework most of Sunday. She worked during the school vacation periods. In addition to three or four daily and sometimes continuous attacks of urticaria throughout the day, she complained of being tired most of the time. The attacks of urticaria bore no relation to eating, but she thought were much worse at times when she was particularly tired, and after emotional disturbance. Further questioning elicited the fact that she was a type of person that constantly works under a "nervous tension," does not relax, and is apprehensive and anxious about her work. She refused to heed my advice concerning a vacation, but consented not to work on Saturdays, and was therefore advised to remain in bed most of the day. Diet was directed at increasing her weight. Local and internal treatment was administered. Reeducative

12. Blocq, P.: Sur un syndrome caracterisé par la topoalgie, neurasthénie monosymptomatique à forme douloureuse, Gaz. hebd. de méd., May, 1891, quoted by Janet: Les obsessions et la psychasthénie, p. 186.
13. Hartzell: Diseases of the Skin, p. 60.
14. Schamberg, J. F.: Personal communication to the author.
15. Hyde, J. N., and Montgomery, F. H.: Philadelphia, Lea Bros. & Co., 1905, p. 223.
16. Jackson, Josephine A., and Salisbury, H. M.: Outwitting Our Nerves, New York, Century Company, p. 136.

measures were prescribed referable to training herself to work mentally relaxed.

Six months after I first saw her she was entirely well of her urticaria; she spontaneously told me that she believed the reeducation of her mental attitude was an important factor in her cure. The following note written by her discusses this phase of treatment:

"Like a great many other individuals, a particular job was given to me to perform. To meet the needs of this obligation it was and is necessary for me at all times to carry a little program of work. My time allotment gave me a very little opportunity for recreation; on an average one night a week might be taken for play. I never seemed to grow weary of the work itself and can truthfully say I always manifested a deep seated interest. However, at all times I was conscious of my next step, always anticipating an average amount of work to be done in an average time. I worked by the clock. My muscles at all times were tense, never relaxing for one moment. This condition was prevalent not only while working, but on the streets. I hurried through the streets as though the very imps were at my heels. When I was ready to court sleep it was with a tired aching body and a tired weary brain. My one consolation, however, was that I could sleep, . . . not a restless tossing on my pillow. For this I was truly grateful. Suddenly it dawned on me that my infinitesimally small life was infinitely important to myself. I took myself in hand and became an almost dual personality. I began to relax. This state was not acquired in a day. I exaggerated a looseness of muscle in order for it to become a habit. I seemed to grow conscious of the enormity of my arms and hands and became the exact counterpart of Ichabod Crane. It mattered not to me how much I would accomplish the next day, the next or the next; I lived only in the present. It was not necessary for me to set a new standard of work; I was going to accomplish just what I could without the terrific nervous strain. This seems all rather childish coming from a grown-up, and no doubt sounds foolish to an absolutely trained mind, but it was a means to an end. I seem to accomplish things, my life's job has not changed an iota; I only feel I am master of myself as to muscle and mental control. At times I slide back to the beaten path but find I must again school myself to a relaxation. This method has helped in some way to decrease the welts and burning patches which visited my skin at all times without regard to my feelings. I consider my skin condition now almost normal."

Fig. 1.—Neurotic excoriations: a self inflicted skin lesion in an acarophobiac patient; superficial ulcerations, scars and pigmentary remains of former lesions.

OTHER SKIN PHENOMENA FOLLOWING PSYCHIC DISTURBANCE [18]

In dealing with a large number of patients with skin diseases it is not uncommon to encounter such diseases as eczema,[19] psoriasis and dermatitis herpetiformis in which no specific cause is known, occurring acutely following severe mental shock. Whitfield [20] reports an interesting case of acute eczema appearing in a patient after fright incident to an aeroplane raid by hostile aeroplanes. The acute outbreaks of eczema repeatedly followed each aeroplane raid and no longer occurred when the patient moved to a safer region. He reports a similar case in which the patient experienced repeated attacks of acute vesicular eczema of the hands subsequent to a period of great suspense.

The sudden turning white of the hair after great fright has been frequently reported. Vignolo-Lutati [21] records such instances occurring in those engaged in front line service in the recent war. Mention may be made here of that rare and curious phenomenon of discolored sweat appearing after great emotional disturbance. Attention is called by Whitfield [20] to the not uncommon complaint in very neurotic patients of angiospasm of the fingers, so-called "dead fingers." My purpose in this paper, however, is more concerned with such psychic cutaneous reactions amenable to psychotherapy, of which the following case is an example:

CASE 7.—A young lawyer complained for some months of flushing of the entire face, appearing immediately after shaving and persisting several hours. He had the alternative of going into court with an unshaven face or a very reddened face which caused him considerable embarrassment. He was treated by others with local applications, which were of no avail. A reconditioning of his psychologic reaction was forthwith attempted. I clearly explained to him the psychogenesis of his complaint and told him that if he could go about the act of shaving the following morning oblivious to the consequences of his prior acts of shaving he would be cured of this reaction. This was explained to him only on one occasion, following which the flushing rapidly disappeared. He has remained free from the reaction every since, which is now four years.

Other localized flushing not following any specific act is seen as a transitory erythema usually involving the face, neck and chest. This cutaneous neurosis appears following the slightest emotional disturbance. One patient with this complaint I purposely engaged in an animated conversation; I saw an erythema appearing on the upper part of the chest slowly spread, involving the neck and face. The erythema varied in degree and extent, so that a mottled appearance was produced. This erythema is unlike that of an ordinary blush, as its origin is different; moreover, it may reappear soon after disappearing; it frequently is mottled and is of longer duration.

Indeed, this vasomotor instability which causes flushing is in some cases associated with acne rosacea, in which it probably plays an etiologic rôle. When another patient, a young woman with acne rosacea, consulted

18. The well known cutaneous phenomenona which emotion causes—pallor, blushing, horripilation, or goose flesh, and perspiration—are not discussed, nor are the cutaneous disturbances in hysteria.

19. The nervous element has been considered by many in a discussion of the pathogenesis of eczema.

20. Whitfield, A.: Etiology of Skin Diseases, Lancet **2**: 61 (July 9), 168 (July 23) 1921.

21. Vignolo-Lutati, C.: Canizie precoce e psicopatie di guerra, Policlinico **25**: 680-684 (July 21) 1918.

me, at the beginning of the consultation her face, neck and chest were quite red, like a well pronounced sunburn. Later this erythema partly disappeared, producing a mottled effect, and at the end of the consultation entirely disappeared. She was self conscious and timid and quite cognizant of the flushing, which caused considerable embarrassment and annoyance. The treatment of this phase of her condition, I informed her, depended largely on herself relative to the development of a mental poise.

In the treatment of localized flushing in the aforementioned patients, psychotherapy is of considerable value.

I believe that some cases of hyperhidrosis of the palms are amenable to psychotherapy.[22] In neurotic patients, one should penetrate into the psychogenesis of the complaint.

THE DERMATOPHOBIAS

Since it has been estimated by medical psychologists that one out of every ten persons is beset in some degree by a fear of one kind or another, it is not surprising that the dermatologist not infrequently encounters phobias having a cutaneous expression.[23]

The dermatophobias, as well as the conditions to be considered later, constitute, of course, a psychasthenia and occupy a position on the border line of dermatology. The dermatophobias, like other phobias, are usually seen in neurotic persons. The morbid idea constituting the phobia may exist virtually as a delusion, or as l'idée fixe of the French.

Acarophobia.—The most common dermatophobia is acarophobia, the fear of parasites. This phobia may develop following an attack of scabies, in which event the patient cannot be convinced that the disease is cured; as a complication of a generalized pruritus, or spontaneously. Any portion of the skin surface may be the site of the phobia. The morbid concept of the patient is to the effect that the skin is infested with insects or parasites. In order to remove them, as well as to relieve the usually accompanying pruritus and other subjective symptoms, the involved area is scratched and dug with the finger nails, and not infrequently a sharp pointed instrument is employed. These procedures temporarily appease the patient, since it is believed that the blood withdrawn consequent to the manipulation of the skin is evidence that the offending organism is removed. These mental symptoms are not continuous but are intermittent, occurring in attacks, with varying intervals of comparative calm.

Fig. 2.—Neurotic excoriations in an insane person: self produced crustaceous ulcerations and scars of involuted lesion.

The aforementioned manipulation of the skin results in a traumatic dermatitis particularly characterized by dug out appearing ulcerations, and forms one type of a group of self inflicted lesions of the skin called neurotic excoriations of the skin.

Rupophobia.—Patients with rupophobia, the fear of dirt, are at times encountered by the dermatologist. Some of these patients present a traumatic dermatitis, or a self inflicted lesion of the skin. In patients presenting the characteristic features of the latter lesions, one should penetrate into the psychogenesis in order to apply the appropriate psychotherapeutic measures.

Sutton[24] reports the case of a young woman who for three years had a dermatitis of the hands; about twenty times a day she would thoroughly wash and scrub her hands and then apply antiseptics. It was learned that her husband had contracted gonorrhea prior to their separation. Through fear of infection she was constantly washing her hands.[25] The patient was successfully treated with psychotherapy.

A fear of cancer is at times encountered in persons past middle age; these cases properly belong in the group of the algies of the French. Such patients direct attention to the normal papillae of the tongue, for example, as evidence of the cancer. Here, again, pain and other subjective symptoms may appear at the site of psychic fixation, an instance of what Blocq classifies as the topalgias, to which reference has already been made. The following is an example: A patient who complained of an aggravated form of so-called "burning tongue," the psychogenesis of which concerned a morbid concept concerning cancer of that organ, was much benefited by a full analytic discussion of his symptoms.

Very commonly patients are seen, mostly young women, with a mild acne, relatively few superfluous hairs, a mild acne rosacea or, indeed, any relatively insignificant facial blemish or mild skin disease, which produces a profound psychologic reaction out of all proportion to the extent and degree of facial involvement. Frequently, in the cases with acne, the psychologic reaction is accentuated by a too sympathetic mother. Treatment of this phase must not be neglected.

22. Klauder, J. V.: Pyschic Hyperhidrosis of the Palms and Soles, Arch. Dermat. & Syph. **11**: 694 (May) 1925.

23. Syphilophobia is frequently encountered by the dermatologist. It is not included here among the dermatophobias. The end-result in the treatment of a certain percentage of neuropathic syphilitic patients is a degree of syphilophobia, the outcome of extrinsic suggestion. These patients live in the expectation of the appearance of some new symptom or some new cutaneous lesion. The prolonged treatment required in syphilis, the uncertainty of a criterion of cure and the sometimes resistant positive Wassermann reaction are important contributory factors in the production of syphilophobia. The neuropathic patient whom it is difficult to convince that he is cured is familiar to all physicians treating syphilis. In the initial treatment of this type of patient, considerable discretion should be exercised by the physician in discussing prognosis. This type of patient rarely neglects treatment. Encouragement and reassurance on the part of the physician are indicated. Too frequent Wassermann tests, if positive, are harmful in view of the profound psychic effect on the patient. In those who are not infected, a "slightly positive" Wassermann reaction and an unwarranted diagnosis of syphilis are important contributory factors in the production of syphilophobia. Erythrophobia, the fear of blushing, is not included here among the dermatophobias, although Thibierge includes it in his paper (Les dermatophobias, Presse méd. **5**: 13-16, 1898). A more detailed discussion of the dermatophobias may be found in Thibierge's paper.

24. Sutton, R. L.: Bromidrosiphobia, J. A. M. A. **72**: 1267-1268 (May 3) 1919.

25. In this patient it is probable that there were other deep seated subjective causes in addition to the husband having had gonorrhea. This probable displacement was like Lady Macbeth's feeling that by washing her hands she might free herself from her deeper stain.

Mention may also be made here to peladophobia, fear of baldness, particularly manifested in men. In the more severe cases of peladophobia, the social intercourse of the patient is much restricted, developing into what is virtually a phobia of society. Janet [26] groups these and similar cases in the category of his l'obsession de la honte du corps. He records a number of instances, one of which concerned a young woman who was horribly tormented by the thought of a small scar on the ala of her nose. The milder cases of the condition under discussion are sometimes very amenable to psychotherapy and reeducative measures, the latter being directed particularly at the development of a mental poise.

Bromidrosiphobia.—This is a rare phobia referable to the skin and its appendages. Few cases have been reported. The two cases reported by Piffard [27] were both of men who firmly believed that their perspiration was very foul smelling, which belief prevented them from mingling in society. Sutton's [24] patient was another man who was firmly convinced that the perspiration from his trunk and axillae, and later only his feet and ankles, was very disagreeable. He compared the odor to that of "rotten onions," on account of which his friends deserted him and his married children did not care to have him come to their homes.

Fig. 3.—Dermatothlasia: superficial ulcerations and scars, the result of an uncontrollable desire of the patient to pick or rub the skin.

The following is a case of bromidrosiphobia which I recently observed:

CASE 8.—A boy, aged 18, was of the firm opinion that the perspiration, particularly from his trunk and buttock, had a very unpleasant odor, which he described as "musty" comparable to sweaty underwear in murky weather. This odor, he stated, persisted in all his outer garments after he had worn them a while. An examination concerning his allegation was entirely negative. By reason of this odor, which made his presence obnoxious to others, he left school and voluntarily left several places of employment. He avoided as much as possible riding in trolley cars; on the occasions in which he did, passengers next to him, he alleged, changed their seats or left the car. He rarely attended the moving pictures; if so his aforementioned experience was repeated. On one occasion, when he was at the home of a girl friend, she walked up to him from a corner of the room in which they were, and the fear that she would become cognizant of this unpleasant odor terrified him, his thoughts became confused, he experienced palpitation of the heart, and a strange cold sensation appeared in his legs. This reaction doubtless manifests the symptom complex of fear which by psychotherapy this psychologic reaction is reconditioned. A dream study was unfruitful. It was not possible to question his early associates, particularly servants, in order to elicit a basis of his phobia. On questioning the patient it was determined that his cognizance of the unpleasant odor first became manifested about six years before, soon after an occasion in which one of his schoolmates was chided by his companions for "smelling funny." The patient mentally sympathized with his classmate and was glad that he (the patient) was not affected.

Trichotillomania.—This condition, originally described by Hallopeau,[28] is a psychoneurotic manifestation characterized by an abnormal desire on the part of the patient to extract forcibly one or more hairs of the bearded region, eyebrows or scalp. Trichokryptomania [29] is an allied disorder in which the hairs are broken off instead of pulled out. These procedures result in peculiar, frequently irregularly shaped patches or partial baldness. These features suggest the factitious nature of the baldness and lead to a discovery of the cause; the patients are usually reticent concerning the practice of pulling out or breaking off the hairs. Other evidences of a psychasthenia are not uncommonly associated. Raymond refers to trichotillomania as the tic de l'épilation, since he regards it as an expression of a tic.

In the foregoing regard it is of interest to note that Davis [30] reports an epidemic of a patchy type of baldness, unlike ringworm or alopecia areata, occurring among seventy-four out of 300 girl orphans. He attributed this condition to scratching or rubbing the scalp as a result of mass suggestion.[31] In a second outbreak of only forty-two cases, Davis attributed the lessened number to a prompt isolation of the affected patients. The foregoing described morbid state may be amenable to psychotherapy, as evidenced in the favorable results obtained by this method of treatment in the cases reported by Sutton and by Pernet.[32]

Dermatothlasia.—Under this name Fournier [33] first described a morbid state, similar to the ones previously considered, which is characterized by an uncontrollable desire of the patient to scratch or rub one or more areas of the skin. This practice may give rise to excoriated lesions. Fournier thought perhaps it was an atavistic expression, comparable to the scratching of certain animals and birds and comparable also to the self mutilation of certain psychopathic patients. An instance of the latter is seen in Figure 2; the patient was insane.

Figure 3 shows self-produced lesions in a girl, aged 7, who experienced what was apparently an uncon-

26. Janet: Les obsessions et la psychasthénie, p. 33.
27. Piffard: Materia Medica and Therapeutics, New York, William Wood & Co., 1881, p. 152.
28. Hallopeau: Alopecia par grattage (trichomania ou trichotillomania), Ann. de dermat. et de syph. **10**: 440-441, 1889.
29. Sutton, R. L.: Trichokryptomania, J. A. M. A. **66**: 185 (Jan. 15) 1916.
30. Davis, H.: Pseudo-Alopecia Areata, Brit. J. Dermat. **34**: 162 (May) 1922.
31. To the physician engaged in industrial medicine the psychologic aspect of certain skin diseases may be of particular importance, as manifested in the following. In cooperation with the medical office of a corporation, I studied an outbreak of an eczematous dermatosis among the women employees, of whom there was a great number who worked in close contact with one another. The dermatosis was not regarded as contagious, although at first ringworm was suspected. The continued development of new cases produced a panicky condition among the employees, who were fearful of contracting the "dreadful disease." Our suspicion that mass suggestion was playing some rôle in the continued appearance of new cases was confirmed when we obtained evidence that at least some of the girls were employing energetic means, relative to scrubbing the hands and using antiseptics, to prevent "contracting" the skin disease. The latter measure, I believe, was an important etiologic factor in the causation of the eczematous lesions in some cases. In the foregoing instance, and this well applies to patients with itching, prompt isolation of the patient from a large number of fellow employees should be considered from the psychologic view.
32. Pernet, G.: Trichotillomania Associated with Other Factitious Manifestations, Brit. J. Dermat. **27**: 85-86, 1915.
33. Fournier, H.: La dermatothlaise, J. malad. cutan. et de syph. **10**: 225-231, 1898.

trollable desire to scratch or rub different areas of the skin, particularly the posterior surfaces of the arms and legs, and the buttocks.

In the same category as dermatothlasia may be placed self inflicted lesions of the skin grouped under the heading of neurotic excoriations. These have been described under different names by a number of writers and have been notably described by Adamson,[34] MacKee [35] and by Pusey and Senear.[36] Brocq's excoriated acne of young girls (Fig. 4) is also placed in this group. The involved area is usually at first pruritic and may have been the site of some insignificant skin lesion. As a result of what is apparently an uncontrollable desire to pick or dig with the finger nail or some other agent, oval or irregularly shaped excoriations or ulcers are produced. Pigmented areas and scars, the result of involution of former lesions, may also be seen. In the excoriated acne of young girls, manipulation is directed at the existing acne lesions involving the face.

Neurotic excoriations are distinct from a factitious dermatitis.[37] Self inflicted lesions of the skin, produced for the purpose of deception, are seen in certain hysterical young women, the psychogenesis of which is to arouse sympathy, and also in malingerers. In the condition under discussion there is a clear recognition by the patient of the unreasonable nature of the act. In view of this and since it manifests a defective self control, it constitutes a psychasthenia, other evidences of which may be manifested.

Fig. 4.—Neurotic excoriations in a patient with acne of the type of Brocq's excoriated acne in young girls: The primary condition was a mild acne; the patient produced a secondary traumatic dermatitis through constant manipulation of the acne lesions.

Neurotic excoriations exist in a variable degree of severity. The milder cases are, of course, more amenable to treatment with psychotherapy, which is directed at the psychic fixation by distraction and voluntary reeducation, or more properly by autoreeducation. Treatment, however, in a large measure depends on the nature of the psychogenesis. Self inflicted lesions of the skin, grouped as neurotic excoriations, have a variable psychogenesis. Some, perhaps, are an expression of a tic, others an expression of a phobia. An instance of the latter is recorded here. Still others may be among the topalgias of Blocq, or among Janet's l'obsession de la honte du corps. In the latter cases, manipulation is performed as a result of the anxiety of the patient to effect a disappearance of the lesion, which occasions in the patient's mind an obsession of shame. This particularly applies to cases of excoriated acne in young girls.

1934 Spruce Street.

34. Adamson, H. S.: Acne, Urticaria and Other Forms of Neurotic Excoriations, Brit. J. Dermat. **27**: 1-11, 1915.
35. MacKee, G. M.: Neurotic Excoriations, Arch. Dermat. & Syph. **1**: 256-269 (March) 1920.
36. Pusey, W. A., and Senear, F. E.: Neurotic Excoriations with Report of Cases, Arch. Dermat. & Syph. **1**: 270-276 (March) 1920.
37. Some writers quote Pindar as manifesting the antiquity of dermatitis factitia. The meaning of "self caused ulcers," in the following passage from Pindar (The Odes of Pindar, English translation by Dawson and Turner, p. 63), is plainly endogenous as compared with exogenous ulcers: "And then he bore and gave him to the Magnesia Centaur, to teach him how to cure manifold diseases for mortals. Those, therefore, as many as came afflicted with self-caused ulcers, or wounded as to their limbs, either with gleaming brass or by the far hurled stone, or wasted as to their frame by the summer's fire or winter's cold, frecing different persons from different pains."

ABSTRACT OF DISCUSSION

DR. CHARLES M. WILLIAMS, New York: I hope that Dr. Klauder will give more details of the psychic treatment he follows. Many of these patients are of low intelligence, and understand very little English. Their complaints are out of all proportion to the discoverable lesions, and largely psychic in origin, but how can we persuade them of the fact?

DR. JOHN H. STOKES, Philadelphia: Transfer from a rural to a city practice leads one to feel that dermatoneuroses are more common under the stress of city life and among city types. Treatment is, of course, the most interesting problem. Two invaluable expedients in my experience with the reasonably intelligent patient are, first, to rationalize the situation and teach a philosophy of evasion, and, second, to drill him or her in the mechanics of relaxation. Most patients develop the psychic background of a dermatoneurosis by trying to do something which they think they should do, but to which they feel they are not equal. Once this impulsion complex can be identified and the patient persuaded that there is a way around instead of through the situation, he makes the first step toward recovery. At times one must really preach the hedonism of which Robert Louis Stevenson has spoken. Turning points arise in the lives of most intensely civilized individuals in which the human frame and spirit seem unable to endure one single thing more. At this point the dermatoneurosis develops. If the patient, under his physician's guidance, returns over the road to the point at which the impasse appears, he can be taught to go around it, turn the corner on it instead of going up in the air. The teaching of the mechanics of relaxation is a complicated affair, of which muscle relaxation is the chief beginning. In ordinary office conversation, if one shows the patient how to let go of his diaphragm and release the tight, wound up feeling at the back of his head, the response is frequently surprising. The dermatoses with a vasomotor background make the most striking response. The belief that there is a psychoneurotic factor in pruritus and dermatitis may become an obsession in the physician who looks for these things to the exclusion of everything else. One should never be carried away by them but observe Dr. Klauder's injunction to carry through a complete physical and laboratory examination.

DR. J. FRANK SCHAMBERG, Philadelphia: Dr. Klauder deserves great credit for bringing before this section a paper relating to the psychic element in a various number of dermatoses. That there is a large element of truth in this there can be no doubt. I recall a young man who had pediculosis cutis, which was easily cured but the itching was never cured. We are all familiar with the cases of dermatophobia in which the patient thinks some insect is under the skin. They frequently will bring in a small piece of skin and ask to have it examined under the microscope, as they are sure some insect is there. These are psychoneurotic cases. I would add to the caution Dr. Stokes has mentioned that we do not allow ourselves to be drawn into this line of thought to the exclusion of other methods of investigation.

DR. ERWIN P. ZEISLER, Chicago: I was particularly interested in Dr. Klauder's discussion this afternoon. Practicing, as I have for ten years, in a large city I can recall very few cases of pruritus due to psychic disorders. I think if we exclude the senile bath and winter pruritus there are very few cases for which some pathologic basis cannot be found. I recall a case seen not long ago that had been treated by an eminent dermatologist for a year as a neurotic pruritus without relief. A chemical examination of the blood showed an excess of bilirubin, and on account of gastric symptoms,

a laparotomy was performed and a partial obstruction of the ampulla of Vater was found, with a marked pancreatitis. The operation gave complete relief from the pruritus. There was no jaundice and yet there was enough obstruction to the flow of bile to produce an excess of bilirubin in the blood. In several other cases a chemical analysis of the blood showed either an excess of bilirubin or of the blood sugar sufficient to account for the pruritus. I think we should not label these cases as neurotic or psychic until we have exhausted every other possible cause.

Dr. J. V. Klauder, Philadelphia: I am posing only as a dermatologist endeavoring to apply some of the principles of medical psychology in the treatment of the cutaneous neuroses. I feel somewhat like apologizing for presenting a paper that could have been better presented by a psychiatrist or a psychologist. We have all seen patients with a cutaneous neurosis, for example, pruritus, who return to us day after day still complaining of their symptom. It was an endeavor to do something for these patients, outside of applying local antipruritic medicaments, that led me to undertake this study. It is important that these patients be thoroughly examined. We all know that organic conditions may be the underlying cause. Much time is required in taking a history. Particular attention should be directed to circumstances leading up to the appearance of the symptom, in order to obtain a clue as to the possible psychogenesis of the complaint. I do not believe psychotherapy is applicable to the type of case Dr. Williams mentioned. If the patients are not intelligent, the method is not fruitful of results. As to the exact method of application of psychotherapy, time did not permit detailing this treatment. My paper goes into this in more detail. Dr. Stokes mentions some of the important principles. In some cases, if we urge a comprehension of the psychogenesis of the symptom on the patient, this is one important application of psychotherapy; the patient frequently responds by a rather prompt disappearance of the symptom.

THE SURGICAL TREATMENT OF VARICOSE VEINS OF THE FEMALE PELVIS *

LUDWIG A. EMGE, M.D.
SAN FRANCISCO

The last few years has witnessed an ever widening interest in the disturbances in the venous circulation of the female generative organs. Controversies relative to pathology, symptomatology, diagnosis and treatment are as lively today as they were in 1889, when Dudley [1] presented his views on the subject before the New York Obstetrical Society. Since 1890 the subject has appeared periodically in the literature without materially changing the basic facts set forth by Dudley.

In regard to treatment, the general opinion still favors destructive surgery. In a preliminary report on clinical and private material, I [2] have pointed out that drastic methods can, in the vast majority, be replaced by constructive surgery. Further experience with this method both in private practice and in the service of the Woman's Clinic of the Stanford School of Medicine convinces me still more firmly of the feasibility of this method. Figures in this present report are taken from observations on twenty-four private patients. A discussion of the literature and of the clinical material will appear elsewhere.

In dealing with venous disturbances of the female pelvis, one rarely sees a definitely circumscribed varicocele alone. It commonly forms a part of a general "varicoid" disturbance involving one or more divisions of the ovarian and uterine circulation. It is therefore more comprehensive to designate this condition as "varicose or varicoid veins of the female pelvis," in preference to "varicocele" or similar terms. The figures in Table 1 will serve as an illustration. These figures indicate the great variations in the location and extent of the regions affected.

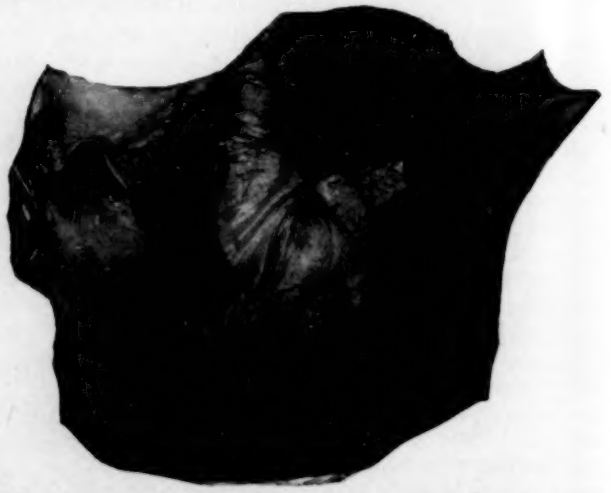

Fig. 1.—The generative organs and pelvic peritoneum of a woman, aged 30 (necropsy specimen). The sacro-uterine ligaments and utero-rectal muscle or ligament stand out plainly. The ovaries lie directly over the vascular area of the peritoneum, which is commonly affected by varicosity formation.

Since making my previous report, I have had occasion to examine some forty clinical and private patients in whom at operation large pelvic varicosities were found. I have become convinced that the preoperative diagnosis is by no means as easily made as I originally stated. In Tables 1 and 2 historical, diagnostic and pathologic findings have been correlated. The vagueness of the local findings makes a definite diagnosis quite difficult. Often it can be definitely arrived at only during an exploratory operation. It is therefore of greatest importance to avoid placing these patients in the Trendelenburg position until after pelvic explora-

Fig. 2.—The mattress suture described is in place. The needle is in the rectal danger area and should not be carried to this point. The heavy suture material here is used for the sake of clearness. The peritoneal position of the ureter is indicated by a dotted line. The suture is a safe distance from the uterine circulation and the ureter.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Dudley, A. P.: New York M. J. 48: 146, 1888.
2. Emge, L. A.: Surg., Gynec. & Obst. 32: 133 (Feb.) 1921.

tion, since elevating the pelvis above the level of the shoulders will stop venous backflow, allowing the distended veins to collapse.

There are several types of venous disturbances of the female pelvis which are divided into two main groups, temporary and permanent dilatations. Hertzler [3] points out that temporary dilatations are of a static type, merely representing an exaggeration in size of the vessels normally visible, while permanent dilatations represent a reactive type resulting from a local predisposing cause. It is not always easy to find the dividing line, since the resulting symptoms are common to the two types. The temporary type falls into the class of general pelvic congestion and commonly responds to nonoperative measures. The permanent type must be considered a chronic condition resisting all medical treatments, and therefore constitutes a surgical entity.

TABLE 1.—*Varicosities Observed at Operation*

LOCATION	
Bilateral:	
Broad ligaments—base	7
Broad ligaments—ovarian veins	3
Broad ligaments—ovarian veins and pampiniform plexus	3
Broad ligaments—pampiniform plexus	1
Ovarian veins	5
Ovarian veins and pampiniform plexus	1
Right:	
Broad ligament base, ovarian veins, pampiniform plexus	1
Ovarian veins	1
Left:	
Ovarian veins	1
Others:	
Rt. broad ligt. base, rt. ov. veins, left pamp. plexus	1
Total	24

RELATION TO PAIN			
Pain		*Varicosities*	
Bilateral	9	Bilateral	20
Sacral	7		
Right	7	Right	3
Left	1	Left	1

DIAGNOSIS	
Varicosities by examination	8
Varicosities by deduction and examination (8 and 4)	12
Parametritis and displacements	4
Displacements	8

TABLE 2.—*Symptoms and Associated Disease Conditions*

SYMPTOMS			
Pelvic pain:		Other complaints:	
Bilateral	9	Dyspareunia	3
Left	1	Dysmenorrhea	13
Right	7	Hydrorrhea	5
Sacral backache alone	7	Menorrhagia	5
Influence of position:		Constipation	7
Worse upright; better recumbent	12	Onset at childbirth	8
Indifferent	12	Married	12
		Single	12

PATHOLOGIC CONDITIONS FOUND AT OPERATION			
Aside from Varicosities			
Retroversion	14	Appendix grossly abnormal	12
Retroversion and descent	6	Cervical disease	8
Descent alone	3	Perineal relaxation	5
Parametritis	2	Cystic ovaries	12
Salp. isthm. nod.	1	Small myomas	1
Sigmoidal adhesions to brd. lig.	3		

WHITE BLOOD COUNT			
Under 6,000	14	Under 10,000	3
Under 7,000	3	Under 11,000	2
Under 9,000	2		

The latter type may again be subdivided into two groups. The first includes all venous dilatations that have arisen as a result of a disturbed support or control of the venous channels without presenting any definite anatomic changes in the vessel wall. The second includes those in which anatomic changes have taken place within the vessel wall, usually traceable to inflammatory lesions. True varicoceles are practically confined to the latter division. In the first group, functional changes precede the organic changes, while in the second group, organic lesions form the starting point. The first group is by far more common and responds to constructive surgery. The second is rarely seen and as a rule demands resection of the affected venous channels. In the series reported here, twenty-three fall into the first and one into the second group.

In making my observations on the extent of venous disturbances during pelvic exploration, I have been impressed with the frequency with which the circulation of a certain portion of the pelvic peritoneum is involved. Directly below the ovary there is an irregular area bounded by the infundibulopelvic and utero-ovarian ligaments above, the uterus and sacro-uterine ligament anteriorly and below, and the mesosigmoid posteriorly. This area harbors an extensive circulation which anastomoses freely with the inferior ovarian plexus, the ovarian and uterine veins, and to some extent with the peritoneal covering of the sigmoid and rectum. Blood vessels surrounded by an abundance of nerve fibers and ganglions traverse this area in close proximity to its fibrous coat. Any prolonged distention of the veins of the generative organs soon involves the veins of this peritoneal area. Nerve fibers are pressed on, and the resulting pain is translated into the ovary because it so commonly is in direct contact with this peritoneal region (Fig. 1). In examining, it is therefore of importance to palpate this area by monomanual, rectovaginal examination in order to differentiate true ovarian from broad ligament pain. During the usual vaginal-abdominal examination the ovary is invariably palpated simultaneously, and the actual seat of pain becomes doubtful. When it is not possible to feel definite venous enlargements, pain complained of can thus be localized, and in the absence of inflammatory lesions of the neighboring organs becomes suggestive of venous disturbances.

There is an intimate functional relation between the pelvic blood vessels, especially the veins, and the musculofibrous structures of the pelvic peritoneum and basal pelvic ligaments. The excellent anatomic study of the sacro-uterine ligaments by Blaisdell [4] is most enlightening in this respect. This investigator points out the following facts:

The basal ligaments of the pelvis, i. e., the sacro-uterine, the plicovaginal, the transversum colli and the recto-uterine ligaments, are so closely allied in their anatomic and physiologic relationship that their action is interchangeable.

These ligamentous structures are made up of a definite, interlaced meshwork of fibro-elastic fasciculi and muscle bundles, which take their origin in the fibrous coat of the peritoneum and spread fanlike toward the pelvic fascia. In their onward course they attach themselves intimately to the generative organs, ensheathing their blood vessels closely, and anchor themselves firmly to the pelvic fascia.

In a state of physiologic rest this meshwork remains open, while it closes when in a state of traction, thus forming a potential or transitory ligament. The normal tonus of this structure is sufficient to maintain a variable state of traction, which in turn produces a controlling pressure on the blood vessels it ensheathes. Any interference with this action invites venous distention.

This fibro-elastic suspensorium of Blaisdell and the perivascular tissue of Cameron [5] are functionally insep-

3. Hertzler, A. E.: Surg., Gynec. & Obst. **17**: 60, 1913; in Mosley: The Peritoneum, 1919, p. 137.

4. Blaisdell, F. E., Sr.: Anat. Rec. **12**: 1, 1917.
5. Cameron, John: J. Anat. & Phys. **42**: 438, 1907-1908.

arable and not only constitute a large part of the pelvic support but are indispensable in the control of a normal venous and lymphatic pelvic circulation.

The recognition of these facts explains the rationale of the surgical treatment set forth below. Owing to the fact that the fibro-elastic suspensorium that controls the normal flow in the venous circulation of the generative organs is firmly anchored to the peritoneum of the sacro-uterine, uterorectal and plicovaginal ligaments, it is possible, by proper shortening, to produce a state of permanent traction and normal compression of the veins in question. By elevating and anteflexing the uterus slightly this traction is increased, and a certain amount of strain is taken from the newly made basal ligaments. This prevents venous backflow from above, as distention of the vessels is controlled. Congestion of the broad ligaments and ovaries is alleviated. Pressure pains no longer occur, and normal menstruation returns or is established. The presence of enlarged cystic or sclerocystic ovaries, notwithstanding the report of Chalier and Dunet,[6] is merely the result of long standing congestion, as I have pointed out.[2] These ovaries are or become functionally normal after restitution of a normal venous state. They should never be removed unless they present advanced inflammatory lesions.

Elsewhere, I have pointed out that, after certain types of shortening of the sacro-uterine and round ligaments, even very large varicose veins will disappear at the completion of this operation. The operation spoken of consists of a shortening of the sacro-uterine ligaments together with a "shirring" and downward shortening of the peritoneal area described above. This operation, aided by a round ligament transplantation, raises the level of the uterus into an exaggerated normal pelvic position and creates a bilateral peritoneal shelf, the permanence of which has been verified by direct examination in two patients after more than two years. One patient died of pneumonia and came to necropsy; the other had a cholecystectomy, and the pelvis was palpated.

The operative procedure (Fig. 2) is not without danger, and the following salient points should be observed strictly:

1. One should avoid the uterine circulation by anchoring the suture (Pagenstecher linen or silk threaded on a Ferguson needle) in the cervical tissue just above the insertion of the opposite sacro-uterine ligament.

2. One should avoid the uterine vein by slanting the first ascending limb of the continuous mattress suture away from the angle formed by the uterus and sacro-uterine ligament.

3. The peritoneal covering of the recto-uterine fold or muscle must be included in the first mattress suture.

4. The ureter should be located. It travels directly beneath the peritoneum to a point located within from 1.5 to 2 cm. from the uterine angle. The ureter should not be approached closer than 1 cm., otherwise it will be kinked.

5. The peritoneum should be picked up with tissue forceps and the needle passed at avascular points. One should never place the suture by blindly passing the needle into the peritoneum. It invariably leads to hematoma formation.

6. One should calculate the space left as entrance to the culdesac to avoid rectal embarrassment. The suture should never be passed as far posterior as the rectal attachment of the uterorectal muscle. It otherwise will lift up the rectum and produce sacculation. It also may invite infection, as the rectal wall may accidentally be penetrated by the needle.

7. The sutures should be tied before the round ligaments are shortened or transplanted, as otherwise too great a tension may be produced.

6. Chalier, A., and Dunet, Charles: Gynecology and Obstetrics 1:239, 1921.

In regard to the round ligament fixation that has developed during the last eight years, it has been a principle to leave the uterus within the pelvis in as normal a position as possible except that the level is slightly raised. While this operation is based on the Adams-Alexander-Gilliam principles, it materially differs from them in that it does not leave the fundus hanging above the pelvis, nor does it approach ventrifixation. The uterus is left in an excellent anteversion-flexion and in good mobility.

The technic is as follows:

The anterior pubic spine is located after the rectus muscle has been freed from its fascia. The respective round ligament is put on tension by lateral version of the fundus. A curved clamp is passed just around the lateral margin of the rectus muscle far enough forward and downward to reach the peritoneum just above the round ligament entrance. At this point there is very little danger of injuring the inferior hypogastric, the femoral vessels or the bladder. Dexterity determines the next step. The curved clamp is passed under the peritoneum along the superior surface of the round ligament to the point that determines the desired elevation and anteflexion of the fundus to be achieved. By opening and shutting the clamp gently, one can free the ligament sufficiently from the excess peritoneum without penetrating it. Some operators will find it easier to penetrate the peritoneum just above the round ligament entrance and to secure the ligament in that way. The ligament then has to be stripped of its peritoneal covering. In either case the end nearest the fundus is anchored under the rectus fascia near the anterior pubic spine. This flexes the uterus normally. The remainder of the round ligament is fastened under the fascia in the shape of an open loop, as described by Crossen.[7] Pagenstecher linen or fine chromic catgut is used as suturing material and is passed through only one third of the ligament to prevent atrophy from anemia. Occasionally it is necessary to advance the ligamentous insertion at the cornua uteri, as otherwise flexion cannot be obtained.

If there exists any other pathologic condition, especially cervical and perineal, it is needless to say that it should be corrected prior to the abdominal operation.

Table 3.—*Operative Procedures and Results*

	Relieved	Not Relieved
Shortening of sacro-uterine and round ligaments	21	
Gilliam suspension alone	..	1
Kelly-Neel susp. and shortening sacro-ut. ligts.	1	
Baldy-Webster susp. and shortening sacro-ut. ligts.	1	
Associated Operations:		
Myomectomy	1	
Appendectomy (routine)	18	
Pelvic adhesions resected	4	
Dilation and curettage	2	
Cauterization of cervix	1	
Shortening of ovarian ligaments	1	
Left salpingo-oophorectomy (varicocele)	1	
Trachelorrhaphy	4	
Perineorrhaphy	5	

In Table 3, operative procedures and end-results are outlined. Twenty-one patients were operated on by the method described above. Three patients had different types of operation, which since have been abandoned. There is one failure in twenty-four patients, or 4.16 per cent., which is a little better than our results in clinical patients and must be attributed to the fact that all patients were handled by one operator. One patient was in addition treated by venous resection and salpingo-oophorectomy on account of definite inflammatory disturbances in the adnexa and their circulation. All patients have been observed for one or more years after operation. Four patients have borne children, two twice, without a return of symptoms. With the exception of one patient, postoperative examinations at various periods have revealed the persistence of the sacro-uterine shelves. The invariable relief from dys-

7. Crossen, H. S.: Diseases of Women, 1922, p. 53.

menorrhea, menorrhagia and dyspareunia is striking but may be due to posture corrections of the uterus. The failure, in one patient, is attributed to lack of persistence of the sacro-uterine shelf.

In reviewing the literature relative to the surgical treatment of pelvic varicosities, one finds that resection or even castration is commonly advocated. Below I have briefly outlined the various methods as I found them in the available literature exclusive of the textbooks:

Resection (excision) of veins: Dudley,[1] 1888; Hirst,[8] 1890; Miller and Kanavel,[9] 1905; Darnall,[10] 1914; Fothergill,[11] 1921; Rowse,[12] 1921; Sihler,[13] 1921; Schubert[14] (occasional castration), 1922; Castaño,[15] 1921, 1925.

Multiple ligation of veins: Kelsall,[16] 1921.

Castration: Malins,[17] 1889; Nielsen,[18] 1889; Wilson,[19] 1891.

Resection and oophorectomy: Chalier and Dunet,[6] 1921.

Resection or ligation of veins and ventrifixation: Kelly,[20] 1890; Shober,[21] 1901; Wall,[22] 1916; Cotte and Jezditch,[23] 1923.

Ventrifixation: Engelmann[24] (occasional castration), 1922.

Shortening of sacro-uterine and round ligaments: Emge[5] (occasional resection), 1921.

As far as I can learn, Engelmann is the only operator who, on several occasions and with good success, has utilized a constructive method, although one may not approve of ventrifixation. During a period of more than ten years, sixty-five patients of the woman's clinic of the Stanford School of Medicine have been treated with good functional result by the same or modified methods of the conservative operation as advocated in this report. The end-results in twenty-four private patients allow me to believe that the method will prove still more successful in the hands of one operator.

SUMMARY

1. The vast majority of varicose veins of the female pelvis are a direct result of damage to the fibro-elastic suspensorium. Only a small portion is the result of actual lesions in the walls of the venous channels.

2. Since the fibro-elastic suspensorium is intimately attached to the pelvic peritoneum which forms the covering of the basal ligaments of the generative organs, it is possible to obtain a normal control of the veins of these organs by increasing traction on this peritoneum.

3. This traction is obtained by shortening the sacro-uterine and associated ligaments, as stated elsewhere, and is aided by a round ligament transplantation.

4. The permanence of this procedure in regard to anatomic and functional results has been established by actual inspection and by the freedom from symptoms for from one to seven years and after childbirth.

5. Resection of veins is ordinarily unnecessary and should be confined entirely to varicosities that are the direct result of inflammatory lesions of the vessels in question.

350 Post Street.

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THERAPEUTIC RESULTS WITH CONCENTRATED SCARLET FEVER ANTITOXIN *

GEORGE F. DICK, M.D.
AND
GLADYS H. DICK, M.D.
CHICAGO

In 1923, we were able to establish the hemolytic streptococcus as the cause of scarlet fever by a series of human inoculation experiments in which the strains of streptococci used fulfilled the requirements of Koch's laws.

But long before that, the association of hemolytic streptococci with scarlet fever had led to attempts at treatment with antistreptococcus serums without waiting for proof of the etiology. These serums were frequently employed by physicians who did not credit the hemolytic streptococcus with causing scarlet fever, but regarded it as an important secondary invader.

In 1902, Moser of Vienna described the first antistreptococcus serum for use in scarlet fever. His serum was obtained by immunizing horses with living serum-broth cultures of streptococci isolated from the heart's blood of fatal cases. Moser noted that following the administration of his serum, there was an improvement in the symptoms of scarlet fever commonly attributed to the toxemia and a fading of the rash.

At intervals during the last twenty-three years, various antiscarlatinal serums have been described. They have all been obtained by immunizing animals with cultures of streptococci. None of them have differed essentially from the serum reported by Moser in 1902.

Antistreptococcus serums have been on the market for many years. At first they were employed extensively, but gradually fell into disuse. Their failure has been due to lack of specificity and lack of potency in some instances as well as to frequent and severe serum reactions caused by the comparatively large doses of unrefined horse serum.

Following the production of experimental scarlet fever, we were able to show that the hemolytic streptococcus growing in the throat produces a soluble toxin which is absorbed into the blood stream and causes the characteristic symptoms of scarlet fever, including the rash. Recovery and subsequent immunity are connected with the production of an antitoxin capable of neutralizing the specific toxin of scarlet fever. We found that the streptococci produce this soluble toxin when growing in artificial medium, so that we were able to obtain the toxin free from living bacteria and standardize it.

With the discovery of the toxin and its corresponding antitoxin, it became apparent that the serum-broth cultures used by Moser for immunizing horses probably contained the toxin and that the resulting serum contained the antitoxin of scarlet fever.* The beneficial action of Moser's serum was doubtless due to antitoxic rather than to bactericidal properties.

The specific toxin of scarlet fever has furnished a means of identifying scarlet fever streptococci and a

* From the John McCormick Institute for Infectious Diseases.
* Read before the Section on Pharmacology and Therapeutics at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

method of standardizing the antitoxin, thus assuring both the potency and the specificity of the serum. It has also made it possible to obtain potent serums without the production of the active infection that follows inoculation of horses with living cultures. The antitoxin is obtained by immunizing horses with subcutaneous injections of gradually increasing doses of the sterile toxin.

Not all strains of scarlet fever streptococci are equally good toxin producers, and it is important to select strains for immunizing the horses that produce a strong as well as a specific toxin.

We have shown that the scarlet fever antitoxin may be refined and concentrated by the method used in the concentration of diphtheria antitoxin, with an increase of potency and reduction in serum reactions. Thus, in the concentrated and standardized antitoxin, the disadvantages of the antistreptococcus serums have been, for the most part, overcome.

The basis of standardization of the antitoxin is the skin test dose of toxin. We have found that 1,000 skin test doses of toxin is an amount capable of producing transient symptoms of mild scarlet fever in susceptible adults, if given without any previous immunization. An amount of antitoxin sufficient to neutralize twenty times this quantity of toxin has been found to be an effective therapeutic dose.

Since it is undesirable to inject large quantities of even refined serum, a minimum potency requirement has been established. This requirement is such that one therapeutic dose shall not exceed 20 c.c. in volume.

The prophylactic dose should be one-half the therapeutic dose. Smaller amounts may protect moderately susceptible persons, but highly susceptible persons require the larger prophylactic doses for complete protection.

The antitoxin is put out in prophylactic and in therapeutic doses. We have avoided any mention of units other than the skin test dose because confusion between the scarlet fever antitoxin unit and the diphtheria antitoxin unit might result in errors in dosage.

The antitoxin in all our cases has been injected into the muscles on the anterior aspect of the thigh. We have employed intramuscular injections because the time saved by intravenous injection does not ordinarily justify the increased danger to the patient.

In early cases, the rash is the most convenient indicator of the action of the antitoxin. If enough antitoxin has been given, the rash will be definitely faded within twenty-four hours, and there will be a marked improvement in the general condition of the patient, especially noticeable in the most toxic cases. The improvement will be associated with a fall in temperature. Following the removal of the toxic element of the disease, the subsequent course of the temperature will depend on the presence or absence of complications. One effect of the antitoxin is the unmasking of such complications as already exist, making their recognition and proper treatment more certain.

We first studied the results in a series of 100 cases of scarlet fever in which the fifty more severe cases were selected for treatment with antitoxin, and the fifty less severe cases were used as controls. A comparison of the results in the antitoxin series and the control series left no doubt that the antitoxin shortened the course of the disease, and reduced the number and severity of complications and sequelae. Complications occurred in nineteen of the fifty control cases and in only four of the antitoxin cases. We then attempted to determine the effect of antitoxin given at different stages of the disease and the proper dosage for different clinical types of scarlet fever. Severe, and even fatal cases, may appear mild at the onset, and there is a tendency to withhold the antitoxin until it is apparent that the prognosis is unfavorable. Thus antitoxin may not be administered until irreparable damage has been done to the tissues.

There is great variation in the severity of scarlet fever. This may be attributed, in part, to the difference in degree of susceptibility as indicated by the results of skin tests, which vary from slightly positive reactions consisting of a faint pink area, barely 1 cm. in diameter, to strongly positive reactions from 3 to 7 cm. in diameter and bright red. Other factors in determining the severity may be the strength of toxin produced by the streptococcus concerned, and the localization of the organism in the body.

We have observed that in patients with sinus infections where conditions are favorable to the production and absorption of large quantities of toxin, there is often a high degree of toxemia. On account of the possibility that large amounts of toxin may be absorbed from infected sinuses, we are giving two therapeutic doses of antitoxin to patients with marked toxemia or septic complications associated with sinusitis.

A comparison of the temperature curves of cases complicated by sinus infections treated with antitoxin and similar control cases treated without antitoxin showed that, following the administration of antitoxin, the temperature dropped to a lower level, though it did not immediately return to normal, while in similar cases treated without antitoxin, the temperature remained at a higher level, and returned to normal more slowly.

One prophylactic dose of antitoxin was given to thirty-four susceptible persons after they were exposed to scarlet fever and had become infected with the specific organism, but before the disease had developed. One therapeutic dose was given in sixty-four cases of scarlet fever on the first day the rash appeared. One or two therapeutic doses were given in fifty-nine cases on the second day of the rash, and two therapeutic doses were given to twelve patients who had been sick a week or longer.

Of the thirty-four persons with positive skin tests and scarlet fever streptococci in their throat cultures, following direct exposure to scarlet fever, who were given one prophylactic dose of the antitoxin, fourteen had sore throat and fever at the time the antitoxin was given. In four, a rash was just beginning to appear. None of these thirty-four susceptible persons already infected with scarlet fever streptococci developed scarlet fever. Nor did they develop any complications. These results indicate that the prophylactic use of scarlet fever antitoxin in sufficient amounts protects even after infection has occurred.

In the sixty-four cases of scarlet fever in which one therapeutic dose of antitoxin was given on the same day that the rash first appeared, no further administration of antitoxin was required. The rash was definitely faded, in some instances it was entirely gone, and the general condition was improved within twenty-four hours. Otitis media occurred in one case. No other complications or sequelae developed in these patients who received antitoxin on the first day of the rash.

Otitis media occurred in five of the fifty-nine patients who did not receive antitoxin until the second day of the rash. And mastoid infection followed the otitis

media in one of these cases. No postscarlatinal nephritis occurred in any case in which the antitoxin was given early.

Antitoxin was not given after the third day of the rash to any but those patients who had become progressively worse during the first days of the disease, and were not seen till the end of the first week of illness. With one exception, all the deaths in the antitoxin series occurred in persons who had been ill from six to ten days before the antitoxin was employed. Two adults who had been sick at home a week had anuria on admission to the hospital, and died within twenty-four hours. In each case there were many hemolytic streptococci in the blood stream, as demonstrated by blood cultures taken before death. These patients showed no improvement in the few hours that they lived after administration of the antitoxin.

Two other patients who were extremely toxic had been sick, one six days, the other seven days. The urine contained large amounts of albumin, but was not much reduced in amount. In these cases, the administration of two therapeutic doses of antitoxin was followed by rapid and uneventful recovery.

In two instances antitoxin was given to patients who were past the toxic stage of the disease. The rash was faded, and mastoid infections with thrombosis of the lateral sinus and septicemia had developed before they were admitted to the hospital. These patients showed a temporary improvement following administration of the antitoxin, but eventually died.

CONCLUSIONS

These results show that concentrated scarlet fever antitoxin is of practical therapeutic value.

They emphasize the necessity of giving the antitoxin early in the disease before complications have occurred, and before too much damage has been done to the tissues.

If administered early in the disease, and in adequate dosage, the antitoxin shortens the course of scarlet fever and reduces the number of complications and sequelae.

ABSTRACT OF DISCUSSION

DR. WILLIAM H. PARK, New York: The credit for first developing an antitoxic serum for scarlet fever must be given to Moser and Savchenko. The work of Dochez and the Dicks not only confirmed the earlier results but also added to them and convinced us that it really was a specific antitoxic serum. They were the first to test the serums for antitoxic potency and to supply a standardized serum for therapeutic purposes. So far as the testing of the serum goes, the Schultz-Charlton reaction following intracutaneous injections of dilutions of serum will give a potency test nearly as accurate as the Dick toxin neutralization test. Neither method gives completely accurate results, but the Dick neutralization test is the more accurate. The Dick neutralization test has so many advantages that it will undoubtedly be generally adopted. It is very important that the antitoxin be measured in units. Recently a number of us defined a unit of antitoxin as the amount that would neutralize 100 skin test doses. I hope the Dicks will approve, as it is founded on their method of testing. At the Willard Parker Hospital, we are using serum given us by Dochez and also that made by ourselves. Most of it is unrefined serum, but part of it was refined by the Banzhaf method developed in our laboratory years ago for diphtheria antitoxin. The only difference between the two is that the rashes are worse with the unrefined serum. In more than a hundred cases, there have been no bad results from using unrefined serum intravenously. The effects following an intramuscular injection are slower in developing than those following an intravenous injection. A very toxic patient, after an intravenous injection, will often appear convalescent in six hours if he had no complications. As to immunization with antitoxin, my feeling is that if the patient has just been in close contact with scarlet fever and one does not mind the development of a rash and the other symptoms of serum sickness, it is wise to give the antitoxin. So far as the pseudoreaction is concerned, I am, however, more in accord with the Dicks than with Zingher. There are, it is true, 3 or 4 per cent. of definite pseudoreactions. A difficulty is that the pseudoreaction is exactly like the real reaction. If the area of injection on the two arms shows the same intensity of reaction, one cannot be certain whether one has a combined or a pseudoreaction. My belief is that, except for scientific work, one does not need to use the heated toxin as a control. The question of exactly what amount of reaction to the Dick dose of toxin suggests susceptibility can be determined by watching the results. Those completely immune to the Dick test appear to be immune to scarlet fever but not necessarily immune to the infections of the scarlet fever streptococci, such as sore throats. The Dick test seems to be as valuable as the Schick test and is a most important contribution to medicine.

DR. GEORGE F. DICK, Chicago: Dr. Zingher has stated that we reported severe reactions following our immunizing doses. He has repeatedly misquoted us in this matter. The reactions to which he refers were purposely obtained in an attempt to show that the toxin alone is capable of producing symptoms of scarlet fever. These persons were later shown to be immunized. But to say that we described these reactions following our immunizing doses is an inaccuracy of which Dr. Zingher must be aware, for we have previously called it to his attention. Concerning pseudoreactions, I do not wish to be understood as denying their existence, but they are not nearly so frequent as Dr. Zingher has reported. If the frequency of pseudoreactions in his tests is not due to an excessive amount of protein, it must be attributed to some fault in his technic. Dr. Zingher stated that Gabritchewsky's vaccine was standardized to contain 0.9 c.c. of toxin in each cubic centimeter. No such statement can be found in the Russian literature. Gabritchewsky's vaccine is a true streptococcus vaccine standardized, not according to toxin content, but according to content of heat killed streptococci. It is a bacterial suspension of such strength that each cubic centimeter yields, on centrifugalization, from 0.02 to 0.03 c.c. of moist bacterial sediment, or 5 mg. of dried streptococci. In articles published during the last two years, we have called attention to the fact that this vaccine probably contained some toxin, which may have accounted for any protection that it conferred. Gabritchewsky's work was valuable, and had it been followed up, it might have led to something more. References to the toxic nature of scarlet fever are frequent in medical literature. As early as 1895, Bergé had concluded that a toxin is concerned. There is nothing to indicate that Gabritchewsky understood the nature of this toxin better than others of his time. Any statement to the effect that he discovered the specific soluble toxin of scarlet fever and consciously employed standardized solutions of this toxin in preventive immunization is not justified by the facts. Zlatogoroff, the most assiduous of Gabritchewsky's pupils, has recently published an article in which he denies the relation of the toxin we described to scarlet fever, and advises Russian physicians to employ Gabritchewsky's vaccine instead of our toxin in preventive immunization.

Relation of Social Service to Records.—The isolation of the social service record from the medical record of the patient is undesirable. The notes entered on the social service record bear largely on factors that influence the patient's well being. Obviously these are essential to the physician in a well rounded study and treatment of his case. From a practical point of view it may not be possible or desirable to combine the records, but an arrangement should be worked out whereby summaries or duplicates of significant entries could be attached to the medical record.—*Hosp. Social Service* **12**:137 (Sept.) 1925.

IS ARTERIOSCLEROSIS A HEREDITARY CONSTITUTIONAL DISEASE?*

M. A. MORTENSEN, M.D.
BATTLE CREEK, MICH.

[EDITORIAL NOTE.—This paper and the three that follow it: by Drs. Allen, Scharf and Lundin; by Dr. Christian, and by Dr. Newburgh, Dr. Marsh, Sarah Clarkson and Dr. Curtis, respectively, constitute a symposium on vascular and renal disease.]

Arteriosclerosis is not a modern disease. Egyptian mummies have been found with sclerotic vessels.[1] Mortality statistics of the last few decades have shown a gradual increase in arteriosclerosis and associated diseases. This fact makes the subject of cardiovascular renal disease a vital one to the practitioner as well as to his patients.

Etiology of arteriosclerosis is abundantly discussed in medical literature, but most authorities agree that our knowledge is still limited and uncertain and hence the subject of this study is put in the form of a question. Infections, acute and chronic, excessive indulgence in protein food, tobacco, alcohol, coffee, and even overwork, have been advanced as causes of arteriosclerosis; but these factors, even to an extreme degree, are by no means always productive of the disease, nor does extreme abstinence save one from this condition.

Because of this fact, I have for many years looked on cardiovascular renal disease as belonging to a certain type of individual having a predisposing tendency to degeneration of arterial tissues. Osler[2] recognized the hereditary factor when he referred to the inheritance of poor arterial tubing unable to stand the wear and tear of the circulation. Because of this, I am offering some observations on a large series of cases studied from the standpoint of heredity and blood chemistry. The study includes 300 patients with arteriosclerosis, 200 healthy women, 200 patients chosen because of blood uric acid being below 3 mg., and 200 with blood uric acid above 4 mg.

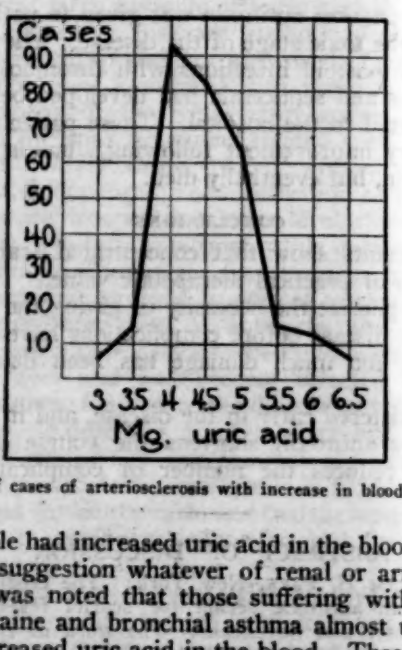
HEREDITY

Most clinical authorities refer to the family or hereditary tendency of the disease. Last year O'Hare[3] presented statistics of a large series of cases and found a positive family history of the diseases in 68 per cent. of the series, with an additional percentage of cases giving history of other circulatory disturbances. Occasionally individual histories show how pronounced the tendency may be in certain families. Mr. B., one of a family of ten children, reported that his father and mother died of apoplexy and of chronic interstitial nephritis, respectively. Nine of the children had already died of apoplexy, and he, the only survivor, had had a stroke and had a blood pressure of 200. In my series of 300 cases of arteriosclerosis, 67.5 per cent. gave a definite history of arteriosclerosis; 8 per cent. a history of other well recognized hereditary diseases, namely, obesity, migraine, gout and bronchial asthma; the remaining 24.5 per cent. were divided between those giving a definite negative history and those having no definite knowledge of causes of death of their ancestors.

In a group of patients having arteriosclerosis with so large a percentage of positive family histories, it does not seem unreasonable to suppose that this heredity carries with it some predisposing dyscrasia or tendency to arterial degeneration, and certainly justifies the conclusion that arteriosclerosis is a hereditary disease.

BLOOD CHEMISTRY

The blood is the most intimate tissue of the blood vessels. It is the carrier of toxins and in this way may have a profoundly irritating effect on the delicate tissues of the arterial tree. In view of these possibilities, the nonprotein nitrogen, uric acid and blood sugar were estimated in all the groups studied. Primarily, the question of renal inefficiency was revealed as a factor in this group. Cases of advanced nephritis were not included. Nonprotein nitrogen and blood sugar were found to be within normal limits, even in the well established cases of arteriosclerosis. But it became very evident that uric acid was rather constantly above normal; and in the 300 cases of arteriosclerosis, only twenty-three, or 7⅔ per cent., had a uric acid of less than 3.5 mg., with 92⅓ per cent. above this figure. The incidence of the increase is shown in the accompanying chart. At first I considered this an evidence of early renal inefficiency. Routine estimation of uric acid in all kinds of cases soon revealed the fact that



Incidence of cases of arteriosclerosis with increase in blood uric acid.

many people had increased uric acid in the blood without any other suggestion whatever of renal or arterial disease. It was noted that those suffering with obesity, gout, migraine and bronchial asthma almost uniformly had an increased uric acid in the blood. These diseases are usually considered to be of the hereditary type, which led to the question of a constitutional basis for these as well as arteriosclerosis. In view of this supposition, I studied the histories of 200 healthy young college women from a standpoint of blood chemistry, blood pressure and family history. The highest blood pressure recorded was 138 systolic and 110 diastolic, and here all immediate members of the family had high blood pressure. Five of the 200 had pressures of 90 or less; otherwise all came within normal limits. None had nonprotein nitrogen above 33 mg., and only thirty were above 30 mg.

Before I discuss uric acid in these groups, a word about what may be considered the normal uric acid content of the blood in health is in order. The colorimetric method of Benedict[4] is the basis of these studies, and gives slightly higher readings than former methods. The average of 1,000 estimations, including all cases except frank nephritis, was 3.7 mg. In the group of

* Read before the Section on Practice of Medicine at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Albutt, C.: Diseases of Arteries, Including Angina Pectoris **1**: 5.
2. Osler, William: Principles and Practice of Medicine, 1908, p. 848.
3. O'Hare, J. P.; Walker, W. G., and Vickers, M. C.: Heredity and Hypertension, J. A. M. A. **83**: 27 (July 5) 1924.
4. Benedict, S. R.: J. Biol. Chem. **51**: 187 (March) 1922; **54**: 233 (Oct.) 1922.

200 healthy women, the average was 3.1 mg. My impression is that uric acid is a little lower in women than in men; hence I feel justified in saying that for normal persons it should not be more than 3.5 mg., and this does not eliminate those with hereditary tendencies to the diseases mentioned.

In this group of 200 healthy young women, 112, or 56 per cent. of the total, had uric acid below 3.5 mg., and of these only twenty-two, or 11 per cent., gave a positive history of arteriosclerosis, migraine, asthma or gout in the family. There were eighty-eight with uric acid above 3.5 mg., and of these, forty-nine, or 24.5 per cent., gave a positive family history of these diseases. There was almost a parallel increase in the incidence of these diseases in the family with the increase of uric acid. In none of these young women was there evidence of nephritis or arteriosclerosis, unless increased uric acid in the blood may be considered a precursor of some of these maladies.

The second series of 200 cases is based on a uric acid below 3 mg., and among them there were 169, or 84.5 per cent., who gave an absolutely negative family history of arteriosclerosis or the other hereditary diseases. Twelve, or 6 per cent., had arteriosclerosis, and nine of these gave a history of the same in their family. Nineteen, or 9.5 per cent. of the total, gave a history of one or more of this group of diseases with no evidence of the same in their own case. Among the group were five with syphilis, none of whom had arterial or other hereditary diseases. Another striking feature is that the average weight was only 132 pounds (60 kg.), and that seventy-five, or 37.5 per cent. of these patients, were diagnosed as having neurasthenia or anxiety neuroses, and belonged to the so-called asthenic type. Among the 200 only three were obese, all of whom were women, and only twenty-five of the entire group weighed more than 150 pounds (68 kg.). These findings suggest that those having low blood uric acid belong to the asthenic type, and that arteriosclerosis and the other hereditary diseases are comparatively rare among them.

The third series consists of 200 cases based on a uric acid of 4 mg. and over. These were taken from other clinical sections so as to avoid duplication. An analysis showed that 80 per cent. had obesity or arteriosclerosis, and only 20 per cent. were negative as to the group of diseases under consideration. The average weight of this series of patients was 176 pounds (80 kg.), as compared with 132 pounds (60 kg.) of those below 3 mg. of uric acid. The family history of this group gave 74 per cent. having arteriosclerosis, obesity, migraine or asthma, 58 per cent. of the total giving a history of arteriosclerosis or obesity. Twenty-six per cent. gave negative histories, which of course includes those that had no positive knowledge of causes of death in their family. In this group with high uric acid only five cases were found showing conclusive evidence of nephritis or renal inefficiency. The study of these 900 cases from the standpoint of heredity and blood chemistry shows conclusively that heredity is a very positive factor in arteriosclerosis and obesity. The number of cases of gout, migraine and bronchial asthma was not great enough to offer a basis for definite opinion, but I think all are agreed that these diseases have a very definite hereditary factor, especially migraine. Cooke [5] notes a definite hereditary tendency in bronchial asthma and calls attention to the fact that, when both sides of the family give a positive history of this disease, it appears earlier in the next generation. This is also true in arteriosclerosis and obesity, according to my observations.

In gout it is considered that uric acid in the blood is a definite factor, but just how it produces the pathologic changes and the classical symptoms is still a disputed question. In even the most manifest cases, a very high uric acid does not seem essential. A patient recently observed (Mr. C. R. C.), with tophi as large as walnuts on various joints, and also a definite arteriosclerosis and a tendency to obesity, had a blood uric acid of only 4.6 mg.

In the series of arteriosclerosis, the greatest incidence of this condition began with a uric acid of 3.6 mg. and reached the maximum between 4 and 4.8 mg., after which the number of cases began to decline. There seems to be a great deal of uncertainty concerning the production and meaning of increased uric acid in the blood. All agree that it is the product of protein metabolism, and some divide it into the endogenous and exogenous uric acid. Mann's [6] work at the Mayo Clinic suggests that the liver plays an important rôle in protein metabolism as related to uric acid. MacLeod [7] also refers to this and calls attention to the influence of the liver on the fat and carbohydrate metabolism. Our findings of a definite parallel between arteriosclerosis and obesity and the blood uric acid suggests that these diseases are fundamentally the result of a faulty protein metabolism, which may be due to a pathologic functioning in the liver cells.

Again, the fact that many women develop a marked hypertension and often a rapidly increasing weight at the menopause suggests that these symptoms are precipitated by some endocrine disturbance, which has been referred to by Engelbach [8] as a dyscrasia of glandular origin. Migraine is also greatly influenced by menstruation because in women it is a very common experience that the attack of migraine bears a close relation to the menstrual period, and at the menopause it often disappears entirely. During pregnancy such women are also surprisingly free from migraine, all of which is very suggestive of an endocrine disturbance as the fundamental factor in this condition. In the study of migraine, uric acid is found to be definitely increased in a large percentage of cases, which suggests that protein metabolism is perverted in some way. In a series of fifty cases, most of which were in women, we found the average uric acid content of the blood to be 3.7 mg. Miller,[9] in his study on the influence of peptone injections on migraine, calls attention to the possibility of a protein sensitization in this disease. The same applies to bronchial asthma as regards heredity and uric acid findings. These are looked on as cases of a protein sensitization which may be due to a perverted protein metabolism.

In spite of the increased uric acid content in the blood in this group of cases, namely, arteriosclosis, obesity, gout, migraine and bronchial asthma, I do not wish to convey the idea that uric acid is the cause of these conditions. I do believe that in conjunction with the positive hereditary tendencies there must be some perversion of the protein metabolism, perhaps related to a variation in the amino-acids because of a perverted function of the

5. Cooke and Vander Veer: Bronchial Asthma, in Tice's Practice of Medicine.

6. Mann, F. C.: Some Functions of the Liver, S. Clin. N. Am. **4**: 345 (April) 1924.

7. MacLeod, J. J. R.: Physiology and Biochemistry, Ed. 4, pp. 563-564.

8. Engelbach, William: Arterial Hypertension Associated with Endocrine Dyscrasia, J. A. M. A. **74**: 1619-1624 (June 12) 1920.

9. Miller, J. L., and Raulston, B. O.: Treatment of Migraine with Peptone, J. A. M. A. **81**: 1894 (June 30) 1923.

liver cell, or brought about by an endocrine dyscrasia. That uric acid itself cannot be the cause is suggested by the fact that the severity of arteriosclerosis and other hereditary diseases is not dependable on the amount of uric acid in the blood.

The incidence of inheritance is suggestive that a dyscrasia affecting protein metabolism is transmitted from one generation to the other. Within the last few months we have had three cases under observation in which a definite history of arteriosclerosis existed in two generations, and the third, still in early life, showed an increased uric acid in the blood. In the two families, the sons had a blood pressure ranging from 140 to 150, their ages being 23 and 26, respectively. In the third family a girl of 9 had a uric acid of 4.3 mg., with no evidence of renal disease and a normal blood pressure.

Another feature in the group of arteriosclerosis is what might be termed a therapeutic test, which is rather universally applied at the present time in cases of this kind as well as in so-called interstitial nephritis. Years of experience have convinced me that a comparatively low protein diet with an abundance of fruit and proper intestinal elimination by dietetic measures is productive of the best results in these patients. I have many patients under observation at present that have followed a low protein *basic* diet over a period of four or more years, who have definitely improved symptomatically on this regimen with no increase in blood pressure or other evidences of progress of the disease. Sansum and Blatherwick have called attention to the value of the basic diet in cardiovascular renal disease, and emphasize the study of the hydrogen ion reaction in the urine as evidence of increase in the alkalinity of the blood. Excessive protein, regardless of the type, increases the acidity of the blood and urine and will also increase the uric acid in the blood. This evidence of benefit derived from a basic diet seems to point to the protein metabolism as a disturbing factor in arteriosclerosis. My experience convinces me that severe cases of arteriosclerosis can at least be kept in abeyance on such a regimen. In conjunction with this dietetic regimen it is essential that the usual aggravating factors, such as chronic foci of infections, excessive use of alcohol and tobacco, coffee and salt, be eradicated as far as possible. These are features that apply to all patients. It is just as important to remove an abscessed tooth in the patient with tuberculosis as in the one with arteriosclerosis. In view of the hereditary factor in arteriosclerosis and the evidence that we have a perverted protein metabolism associated with it, is it not justifiable to consider this as a constitutional factor in the disease? In view of these findings, I think that a thorough understanding of a basic diet is very essential, not only as a curative factor, if such is possible, but also as a prophylactic measure, especially in families in which arteriosclerosis or other hereditary diseases exist, and which evidence a perverted protein metabolism. Sansum and Blatherwick [10] have called attention to the value of this basic diet in nephritis, and in my opinion it is of just as great value in arteriosclerosis. I believe that the excessive indulgence in or abuse of the protein element in nutrition is productive of more general harm than overindulgences in the other nutritive elements. Families in which arteriosclerosis and the other diseases exist require our advice as to dietetic regimen early, as a prophylactic measure, and in this way we hope to postpone the appearance of arteriosclerosis. The strikingly large number of cases of arterial hypertension that appear before 50 years of age are the ones that should be greatly benefited by the early institution of the proper dietetic regimen. For years I have been impressed with the fact that nearly every case of early arteriosclerosis shows a family history of this disease or obesity and frequently migraine on both sides of the family, and that these patients belong uniformly to the robust type of individual. Early dietetic management may do much in such cases, because it is well known that these persons are unduly fond of food and especially protein, and uniformly addicted to overindulgence.

10. Sansum, W. D.; Blatherwick, N. R., and Smith, Florence H.: The Use of Basic Diets in Treatment of Nephritis, J. A. M. A. 81:883 (Sept. 15) 1923.

CONCLUSION

I believe that arteriosclerosis or cardiovascular renal disease is definitely hereditary, amply proved by careful study of family histories. Also by way of heredity an abnormal protein metabolism is transmitted, which is manifested by an increased uric acid content in the blood, and which no doubt occurs long before any evidence of hypertension or renal disease can be detected. This increased uric acid in the blood suggests an inherited inability properly to metabolize protein, which may be endocrine in origin, or due to abnormal function of liver cells.

Our best and most rational prophylactic measure as well as remedy is a basic diet, which necessitates a reasonably low protein intake.

CLINICAL AND EXPERIMENTAL RENAL DEFICIENCY *

FREDERICK M. ALLEN, M.D.
RUDOLPH SCHARF, M.D.
AND
HARRY LUNDIN, PH.D.
MORRISTOWN, N. J.

When any clinical disease can be satisfactorily reproduced in experimental animals, the basis is laid for its better understanding and control. For this reason the effort has been made on a comprehensive plan in this institute to produce a condition that has heretofore been lacking; namely, the reproduction of clinical kidney diseases. This investigation is still in progress. The preferred course would be to wait some years longer until the evidence is completely gathered, and then to present the results in finished form. The problem of finance is the real reason why such investigations cannot be carried out ideally. It is possible only to add to the series of previous brief reports, summarizing our tentative findings and conclusions to date.

As experimental animals, dogs, sheep and goats have been used, each species presenting some special peculiarity or advantage, and all being large enough to permit the necessary physiologic and chemical observations. Some of the experiments are acute. Others, designed to imitate chronic nephritis, necessarily extend over years, and these are the chief cause of delay and difficulty. The general plan of the work has been to injure or reduce organs and then place functional strain on them, under conditions imitating those of clinical cases as closely as possible.

* From the Physiatric Institute.
* Read before the Section on Practice of Medicine at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

ACUTE CONDITIONS

Total nephrectomy produces a condition which in dogs is actually fatal, generally within a couple of days. Nitrogen retention and acidosis are demonstrable, but death occurs from weakness without edema, hypertension, or any of the typical clinical phenomena of nephritis. Total nephrectomy thus gives as poor an imitation of clinical nephritis as total pancreatectomy gives of diabetes. One advantage is gained by changing to goats, for these animals may survive total nephrectomy for a couple of weeks. The mystery of the difference between total nephrectomy in animals and total suppression of urine in man is thus reduced to a mere difference of species. The survival of the nephrectomized goat is about equal to that of a human patient with total anuria, and the symptoms are essentially similar.

After total nephrectomy, dogs refuse food and are subject to vomiting and diarrhea, but intravenous injections still offer a means of modifying the symptoms. Urea injections afford a fairly good imitation of clinical uremia. Sodium chlorid injections are able to produce convulsions suggestive of the eclamptic form of uremia, but no satisfactory edema is produced. Nephrectomized sheep and goats, on the other hand, eat and digest well, and thus can be fed either protein or salt. They are subject not only to nitrogen retention but also to large dropsical effusions. The absence of any gross pitting edema of the face or limbs may be a matter of species, or may be due to an absence of the peripheral vascular injuries which are assumed to be present in human cases. The production of the experimental anasarca seems the most important point.

The effects of functional burden on the kidney can be tested in uranium-poisoned animals. The lethal dose in our experiments has been about 4 mg. per kilogram of weight. Dogs ordinarily bear 2 mg. per kilogram without dangerous symptoms. But when a dog receiving 2 mg. of uranium nitrate per kilogram is fed heavily with protein or given large quantities of sodium chlorid, death occurs within a few days, just as if two or three times as much uranium had been given. The pathologic alterations in the kidneys are correspondingly increased. Plain water or sodium bicarbonate does not have this effect. The supposition that only the sodium ion in sodium chlorid is harmful in renal disease is thus disproved. These experiments carry a practical lesson; namely, that in acute nephritis the intake of both protein and salt should be rigidly restricted, with a view not merely to ameliorating the immediate symptoms but also to diminishing renal damage.

CHRONIC CONDITIONS

We have had poor success from attempts to produce conditions of chronic nephritis by several months' administration of small doses of mercury, uranium or lead, with or without protein or salt overfeeding. Such methods are uncertain, because it is too difficult to steer a prolonged course between trivial injuries on the one side and acutely fatal damage on the other.

As partial pancreatectomy is the best means of producing chronic experimental diabetes, so also partial nephrectomy seems to offer the best reproduction of chronic nephritis. There is an interesting variation in the quantity of kidney tissue needed by different species. Dogs die if the remaining kidney tissue amounts to much less than half of one kidney. We have not yet learned how small a kidney remnant may suffice for a goat, but it is certain that this species can live in seemingly good health with only one fifth of one kidney. Earlier investigators discarded partial nephrectomy as a means of imitating clinical nephritis, because the results were supposed to be negative. This idea is correct under ordinary conditions, and neither albuminuria, clinical symptoms nor downward progress occur spontaneously. The results become different when we introduce a factor that was overlooked by most investigators; namely, functional overstrain.

SYMPTOMS OBTAINED

With a suitable degree of partial nephrectomy, overfeeding with either protein or salt proves fatal in any species after a period of weeks or months, and by a suitable management of the experiments the following symptoms of kidney disease are obtained during this time:

1. *Azotemia.*—By protein feeding, the urea and other nonprotein nitrogenous substances can be raised to practically any desired level in the blood. In one dog we thus obtained figures of 670 mg. urea and 40 mg. of creatinin + creatin per hundred cubic centimeters of blood, while the total nonprotein nitrogen was 360 mg. Typical uremic deaths occur under these conditions.

2. *Acidosis.*—The inorganic phosphorus in the blood of such animals may reach levels of 20 mg. or more per hundred cubic centimeters, while the plasma bicarbonate may fall to levels of 20 per cent. by volume or lower.

3. *Edema.*—Partially nephrectomized dogs are not subject to edema even with the heaviest salt feeding, unless there is a slight local inflammation to act as a contributing factor. Partially nephrectomized sheep can develop a retention of as much as 4 or 5 kg. of water, which can be made to appear or disappear or persist by suitable control of the salt intake. In a pregnant sheep, the fluid retention with high salt feeding amounted to 13 kg. This retention does not take the form of a pitting edema. But, in addition to effusions in the serous cavities, a marked water storage in the subcutaneous tissue is revealed by incision; apparently only the structure of the tissues prevents pitting. There is evidently also a large storage of water in organs or tissues where it is not grossly visible. On the other hand, in a goat possessing only one fifth of one kidney, salt feeding resulted in polyuria and removal of water which had previously been stored in the tissues. These differences and also the peculiarities of salt retention cannot be discussed here in detail. We seem to have indications of both wet and dry salt retention—retention of quantities of salt greatly out of proportion to the retained water, and retention of water out of proportion to the salt.

4. *Hypertension.*—This study has been facilitated by the use of an auscultatory method, which is as simple and apparently as satisfactory for taking blood pressures in dogs as in human beings.[1] Though dogs remain immune to edema even with severe spontaneous nephritis, we have demonstrated the existence of a persistent hypertension of 200 mm. or more in conjunction with spontaneous nephritis in a dog. Partial nephrectomy does not yield any equal results, even with heavy or prolonged overfeeding with protein or salt. Elevations of 20 or 30 mm., namely, to a systolic level of from 180 to 190 mm., have been the best obtained thus far.

1. Allen, F. M.: Auscultatory Estimation of the Blood Pressure of Dogs, J. Metabol. Res. 4: 431-443 (Sept.-Oct.) 1923.

They are somewhat variable, and nephritis tends to predominate over hypertension. These observations seem to favor the view that hypertension is not a result of kidney disease alone, but results from a more generalized circulatory disorder. In our clinical work also we have been inclined to regard hypertension as a distinct entity, which may occur pure or mixed with nephritis, the hypertension being perhaps the same condition in the two instances, though the hypertension and nephritis may possibly interact and aggravate each other.

5. *Hyposthenuria.*—The power of the kidney to concentrate and dilute is generally regarded as its most essential function, and the impairment of this power as the most decisive evidence of nephritis. Partially nephrectomized dogs have an easily demonstrable impairment of water excretion, large volumes of administered water being retained in the blood or tissues while the urine remains relatively scanty and its specific gravity relatively high. This deficiency of water excretion is most marked when the removal of kidney tissue is most extensive, and is increased by any diet or other measures that damage the kidney remnant. Partially nephrectomized sheep and goats, on the other hand, are readily capable of polyuria and can dispose of enormous quantities of water and salt, even though considerable retention may occur in the blood or tissues. Thus, the goat already mentioned, possessing only one fifth of one kidney, was able to excrete as much as 7 liters of water and 70 gm. of sodium chlorid a day. After more prolonged overfeeding with salt, however, partially nephrectomized goats and sheep show a distinct reduction of the concentrating power, for example, from a maximum of 2.1 per cent. to 1.2 per cent. sodium chlorid, this impairment of function being then permanent. We have not been able to obtain such impairment by the heaviest overfeeding in normal animals.

6. *Blood Volume Changes.*—It is well known that the blood volume is very efficiently regulated in normal animals, so that it is little changed by any kind of dosage by mouth and only slightly or briefly even by intravenous injections. Certain abnormal conditions impair this regulation. In a normal pregnant sheep, the mere feeding of salt and water increased the blood volume 20 per cent. Partially nephrectomized dogs and sheep are still more subject to increase of plasma volume, up to 32 per cent., with salt and water feeding. On the other hand, a diminution of plasma volume by as much as 10 per cent. is obtainable with some conditions of diet, especially in goats. The Griesbach congo red method affords an easy means of following these fluctuations and thereby proving that clinical conditions of this character are duplicated in experimental animals.

7. *Anemia.*—In addition to hydremia, partially nephrectomized animals are subject to the development of anemia like nephritic patients. The diet is again the responsible cause, but details must be left for future publication.

8. *Urine Changes.*—Overfeeding of partially nephrectomized animals with either protein or salt gives rise to the excretion of albumin and red blood corpuscles in the urine. This albuminuria in dogs usually remains slight, perhaps one or two parts per thousand by Esbach's method; but in sheep it becomes much heavier. Heavy salt feeding also gradually gives rise to numerous casts; protein feeding seems to be much less effective in this regard. If the overfeeding is stopped after a few weeks, the albumin, red cells and casts may diminish but usually do not disappear. In other words, a permanent renal lesion is produced, as judged by the urine.

9. *Renal Pathologic Conditions.*—Simple partial nephrectomy without functional overstrain is not followed by any histologic changes resembling a nephritis in the kidney remnant. Normal animals are not subject to nephritic lesions from overfeeding with either protein or salt. It is to be understood that in all such experiments the diet was kept as nearly normal as possible for the species; the dogs received their protein in the form of meat, and the sheep or goats in the form of grain, sometimes with soy bean meal. The sheep and goats would not eat soy beans or any high protein diet for any long time. The observations of the histologic effects of protein in partially nephrectomized animals are still incomplete. Prolonged high salt feeding produced slight changes in the glomeruli and more marked changes in the tubules. There was hypertrophy of the glomeruli, with marked increase of nuclei. Lymphocytes and polymorphonuclear leukocytes were seen about the proximal convoluted tubules. These tubules in various places were without nuclei, and their lumina were often filled with necrotic masses showing occasional nuclei and also numerous red cells. Casts and red cells were also found in the Henle loops and distal convoluted tubules. The renal impairment from functional overstrain, indicated by the clinical symptoms, is thus confirmed by the pathologic studies. These studies have been chiefly carried out by Dr. J. Loesch, and are still in progress.

CLINICAL CONSIDERATIONS

The reproduction of a number of the chief features of nephritis by the functional overstrain of a small kidney remnant in experimental animals seems to be in accord with at least two sets of clinical facts.

First, retinitis occurs definitely from chemical causes in diabetic and nephritic cases, and if these cases are brought under control by diet the retinitis is definitely arrested. In other words, the process of edema, infiltration and hemorrhage is, in this instance, at least, subject to functional influences. If the retinal vessels may be considered as representative of the small vessels in the kidneys and elsewhere, similar conditions may be assumed to hold for the latter vessels.

Second, clinical experience does not justify the widespread belief that either nephritis or hypertension is a disorder running a spontaneous, inevitable course. We know after six years of careful study that the great majority of hypertension cases can be brought and kept under control by a sufficiently strict salt-free diet. The progressiveness is halted, and the arteriosclerosis, which in these cases seems to be largely secondary to the hypertension, appears likewise to be prevented. The same rule seems to hold for any form of chronic kidney disease. If the case is so severe that the symptoms cannot be controlled by treatment, the progressive tendency continues. If the symptoms can be controlled and the blood chemistry kept anywhere near normal, the progressive tendency is generally abolished. The only exception to these rules arises from infection, which is both a primary cause and a cause of downward progress in most forms of metabolic disease.

COMMENT

Both the experimental and clinical studies seem to place diabetes and kidney disease on much the same basis. The pathology of both is composed of a primary

and a secondary factor. The primary factor is infection or intoxication, producing the initial lesions. The secondary factor consists in a functional overstrain of the damaged organ. The hydropic degeneration of the islands of Langerhans is explainable on this ground and no other. Likewise the degenerative changes in the renal epithelium, which have been mysterious in cause and character, can probably in large measure receive the same functional explanation. Vascular disease or other local peculiarities may make the conditions less clear-cut in the kidneys than in the pancreatic islands. One difference must be recognized in the fact that functional rest of the pancreatic islands clears up glycosuria, while functional rest of the kidneys does not usually clear up albumin and casts. On the other hand, it is also known that albumin and casts are not trustworthy signs of the progressiveness of a case. With allowance for certain inevitable consequences of existing organic and vascular damage, the recognition of the class of secondary anatomic lesions due to functional overstrain should represent a valuable advance in the study of diseases of the kidneys. The clinical application is also important; namely, that for the most part hypertension and nephritis are not inherently progressive but are permanently controllable by adequate sparing of function.

CLASSIFICATION OF CHRONIC NEPHRITIS *

HENRY A. CHRISTIAN, M.D.
BOSTON

Classifications of nephritis, whether suggested by clinicians or by pathologists, usually are very complex. It has seemed to me that these classifications, by reason of their complexity, are of less service in the clinic, because it is so difficult to fit the patients into them, and because so often there is a failure of agreement between the predicted and the actual anatomic changes in the kidney.

My own experience has been that, even with the application of both the old and the new methods available for diagnosis, it is not possible to diagnose accurately, during life, the anatomic changes that will be found in the kidneys after death. This is not to say that, from certain groupings of symptoms and clinical findings, one may never prophesy correctly what the pathologist will find at necropsy; but the errors are sufficiently frequent to justify much skepticism of one's ability to correlate clinical findings with postmortem lesions. These failures minimize the usefulness of such classifications as are on an anatomic basis, and the majority of them are of this type. Furthermore, it seems to me that complicated classifications create a false idea of our knowledge of nephritis, particularly for those who do not obtain necropsies in their fatal cases and therefore cannot check the lesions found in the kidney with the opinion formed before the patient's death as to his proper place in the classification.

GROUPING OF PATIENTS

I believe a simple clinical grouping of patients with nephritis, for the present at least, is more useful to the clinician than any other. For this reason, I have utilized such a very simple clinical grouping of my patients with nephritis as the following:

Acute nephritis.
Subacute nephritis.
1. Subacute nephritis with edema.
2. Hemorrhagic nephritis.

Chronic nephritis.
1. Chronic nephritis with edema.
2. Chronic nephritis without edema.
3. Vascular hypertension progressing into nephritis.

In Group 1 of chronic nephritis, hypertension is rare until the late stages, while in Group 2 it is present throughout with very few exceptions. Obviously, there is relatively little difference between Groups 2 and 3 of chronic nephritis, though to separate them when possible seems advantageous.

Chronic nephritis with edema, meaning by edema that of renal origin and not edema secondary to cardiac failure, is actually a rare condition. It is to be recalled that many nephritic patients have cardiac insufficiency, in addition, and this results in cardiac edema. Failure to keep this in mind often leads to error in classification. Even if one includes with chronic nephritis with edema those patients with renal edema whose duration of life is so short as to justify the diagnosis of subacute rather than chronic nephritis, they still are very infrequent in occurrence. In my own clinic, we have studied approximately 1,650 cases of chronic nephritis, of which fifty-four have been placed in the subacute group, and only about five in the group of chronic nephritis with edema. It is to be recognized that some patients, beginning with edema, may pass on to a stage of chronic nephritis without edema, and might be classed in Group 2, because of failure to get this from the history. Making every allowance for these possibilities of error, it is very evident that chronic nephritis with edema is actually a rare disease, and that the bulk of patients with chronic nephritis come in Groups 2 and 3.

Another thing of much interest in this connection is that very few patients with chronic nephritis placed in Groups 2 and 3 give any history suggestive of an onset with acute nephritis. Patients with renal edema, whether grouped as subacute or chronic, usually begin with acute symptoms like those of the usual acute nephritis, but instead of clearing up, the condition steadily progresses, for most cases to death, in less than two years, but in a very few it continues for a much longer time with later decrease of edema, until they become, in these later stages, indistinguishable from patients in Group 2; i. e., chronic nephritis with edema. The vast majority of patients with acute nephritis recover, and only a few die in the acute stages. So far as I can judge, patients who have had acute nephritis are not more liable to chronic nephritis without edema than are normal persons who have never had acute nephritis. This is a further reason for separating into different groups those patients who show so definite a difference in their clinical picture.

Now if one studies patients in Groups 2 and 3 of chronic nephritis, and follows the progression of symptoms and physical findings, checking the progression of the disease with repeated examinations of the urine and tests of renal function, it soon becomes obvious that these patients do not suffer merely by reason of a kidney disease, but that disturbances involv-

* Read before the Section on Practice of Medicine at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

ing the general vascular system are present. They are not patients with chronic nephritis, but a group of patients with general vascular disease in whom the renal disease is but a local manifestation, which may or may not dominate the clinical picture. The simple clinical grouping suggested above quite definitely separates patients considered as having chronic nephritis into two groups; one, a large group whose renal disturbance is but a part of a symptom complex of vascular disease, and another, a very small group, which is definitely different, possibly actually a nephritis in the sense of a disease localized almost entirely to the kidney. It is very significant that so large a proportion of patients, diagnosed as having chronic nephritis without edema, should so regularly show marked evidence that they are suffering from extensive vascular disease. In other words, a very large proportion of our patients, diagnosed as having chronic nephritis, are really patients with extensive vascular disease rather than chronic nephritis in the sense of a local renal disease.

Patients with chronic nephritis diagnosed as belonging in Groups 2 and 3 show numerous evidences of diffusely spread vascular disease. In the first place, a very large percentage of them have high blood pressure, which, so far as we know, is evidence of a widespread disturbance in the peripheral small arteries, with either spasmodic or organic reduction of their bore. Further evidence of small vessel lesions lies in the changes so frequently seen in the eyegrounds, such as sclerotic changes in the arteries, hemorrhage, gray and white spots, or edema; changes often, though probably quite incorrectly, spoken of as albuminuric retinitis. Sooner or later, these appear in almost all the patients of these groups.

Very frequently the large arteries, such as the radials, brachials and temporals, show thickening and tortuosity. The aorta becomes dilated, as shown by percussion or roentgen ray. Heart hypertrophy is very common, and cardiac failure often causes disturbing features of the clinical complex. Angina pectoris may point to coronary disease. Various cerebral disturbances, including hemorrhage, may occur as evidence of lesions involving the cerebral vascular territory. Nosebleeds and hemoptysis, when they occur, point to vascular lesions in these territories.

A goodly number of these patients show moderate glycosuria, often only irregularly, and have hyperglycemia. Some regard this as evidence of vascular lesions affecting the islands of Langerhans in the pancreas. Possibly some of the gastro-intestinal symptoms result from lesions in their arterial supply. In an occasional case, this seems to be definitely true.

All in all, there is striking clinical evidence of vascular lesions widespread in distribution, while pathologically, in the kidneys themselves, as well as in other organs of the body, microscopic study shows vascular lesions often extremely marked and widespread in distribution. Keeping in mind these various vascular lesions, one can readily understand a wide variation in symptoms and physical findings, depending on the extent and distribution of vascular lesions.

It has seemed to me that if more attention in our studies were focused on general vascular changes in this very frequent variety of chronic nephritis, rather than on renal function alone, we might obtain a better conception of the disease.

The ophthalmoscope has been of extreme value in the study of these vascular lesions. In its present forms, it is easy to use and gives so much information of value in a variety of diseased conditions, that it seems to me a well nigh indispensable instrument for the man practicing any type of internal medicine. It should become a pocket companion of the stethoscope for all internists.

The roentgen ray has added greatly to our knowledge of disease of the larger vessels. Dilatation, tortuosity and calcified plaques in the chest film, supplemented by fluoroscopy, present us with very definite ideas of type and degree of vascular lesion in the aorta. The roentgen ray will reveal calcification in large, medium sized and even small peripheral arteries and add information about blood vessels, at times of much service. Today, stereoscopic roentgenograms frequently can show us the tortuosity, dilatation or calcification of the circle of Willis as evidence of cerebral vascular disease. Use of the roentgen ray in the study of patients with chronic nephritis can but impress one with the importance of vascular lesion in the patients of this group.

If one is to manage satisfactorily the patient with the progressing symptoms of chronic nephritis without edema, close attention often must be focused on the heart. Progressing enlargement, appearance of arrhythmias, signs of cardiac insufficiency, such as edema, râles at the lung base and an increasing amount of albumin in the urine, and the development of the diastolic murmur of slight to moderate aortic insufficiency are the signs of a growing cardiac failure which will form an important element in determining the patient's prognosis.

Very much of value still can be learned of these patients from simple urine examination, especially from the microscopic study of urine sediment as to cells and casts. This somewhat old fashioned method still remains a most valuable part of the examination of a nephritic patient, especially if the physician himself looks at the sediment rather than getting his information from a technician, however careful and well trained.

Earlier in these remarks, I referred to tests of renal function. I would emphasize that these may be very simple. The phenolsulphonephthalein test may be done by any physician on office or house patients. A determination of blood urea is helpful if attainable. Other determinations of blood chemistry add too little of value to be much worth while, and now for some time in our clinic we have discarded them.

I have made reference to roentgen-ray examinations in chronic nephritis. These, however, need not be applied in the study of the individual case. Rather are they useful in emphasizing the extent of vascular changes, which, after all, are recognizable by the simple armamentarium of the practicing physician, once their frequency and significance are appreciated.

It is to be emphasized that the careful repeated application of such simple methods as history taking, physical examination, including the use of simple bedside apparatus, as the stethoscope, ophthalmoscope, blood pressure machine and blood counter, along with very simple methods of urine examination and simple tests of renal function, give us the needed information for the understanding and management of patients with chronic nephritis. Methods out of reach of the well trained general practitioner add not a great deal of useful information and certainly should not supplant any of these simpler, long used methods.

721 Huntington Avenue.

THE DIETETIC FACTOR IN THE ETIOLOGY OF CHRONIC NEPHRITIS *

L. H. NEWBURGH, M.D.
PHIL L. MARSH, M.D.; SARAH CLARKSON, M.S.
AND
A. C. CURTIS, M.D.
ANN ARBOR, MICH.

During the last hundred years, continuous efforts have been made, in laboratory and in clinic, to find the cause or causes of chronic nephritis. The problem is still far from satisfactory solution. It is true that a number of substances experimentally employed, notably several heavy metals, have been shown to produce chronic sclerosing disease of the kidney. But chronic heavy metal poisoning occurs too infrequently to be etiologically important in human chronic nephritis.

It is obvious that causes must be sought, exposure to which are exceedingly common in those parts of the world in which chronic nephritis is prevalent. From time to time clinicians have suspected overeating as a factor in the etiology of chronic nephritis, and, since protein is the only one of the three foodstuffs whose end-products are excreted by the kidney, suspicion rests specifically on the nitrogenous foods. No systematic study of the relation of diet to nephritis was undertaken until 1916, when one of us began to feed high protein diets to experimental animals. The problem has been studied in our laboratory continuously since that date, and it is our purpose in this communication to report in summary the results thus far obtained.

TABLE 1.—*Effect of High Protein Diet on Rabbits' Kidneys (Egg)*

No.	Daily Protein	Months	Urine	Histology
6	2-3 egg whites	0.5-1.5	Albumin; casts	Cloudy swelling; congestion; casts
4	Egg white ad lib. alternate stock diet	3-7	Albumin; casts	Cloudy swelling; hemorrhage; casts
4	3 egg whites, 230 calories	4-10	Albumin; casts	Same

As a preliminary experiment,[1] a relatively small series of normal rabbits was fed a diet containing a high proportion of coagulated egg white. Within a few weeks, all such animals were voiding a urine containing albumin and casts. Table 1 summarizes these experiments.

In order to demonstrate that the production of these abnormalities was not a specific property of egg albumin, a second protein, casein, was fed in a similar manner.[1] The casein was mixed with milk, grated carrot and sodium bicarbonate, so that the diet was abnormal only in its excess of protein and the added alkali, which maintained an alkaline condition of the urine. As will be seen in Table 2, abnormalities were found similar to those produced by egg white.

Since the ingestion of animal protein by an herbivorous animal might produce injury that would not follow the ingestion of a vegetable protein, another series of rabbits was kept for several months on a diet consisting of soy beans and water.[1] Soy beans contain about 38 per cent. of protein. These rabbits excreted about twice as much nitrogen in the urine as normal control animals. The urine was alkaline. It will be seen from Table 3 that a slowly developing injury occurred from this diet.

Our next effort was to repeat this type of experiment on a larger scale and in a more systematic manner.[2] Dry powdered lean beef was selected for the protein because it was known to be "complete" from the amino-acid standpoint. This was mixed in definite proportion with white flour, bran, baking powder and water, and the resulting glutinous mass was baked. Diets containing 37 per cent. of protein and 27 per cent. of protein,

TABLE 2.—*Effect of High Protein Diet on Rabbits' Kidneys (Casein)*

No.	Daily Protein	Months	Urine	Histology
4	30 gm. casein	7-11	Albumin; casts	Cloudy swelling; hemorrhage; casts
2	15 gm. casein	12	Normal	Normal

respectively, were thus obtained. This diet was supplemented with green leaves twice weekly.

It will be seen from Table 4 that the rabbits which received the diet containing 37 per cent. of protein developed renal changes of a chronic type in from five to seven months. Rabbits receiving 27 per cent. of protein for the same time showed evidence of a renal injury of an acute type; only when the feeding was continued much longer was the diet capable of producing the chronic change that occurred much earlier with the higher diet. A large number of control animals showed no such lesions. One may conclude from these experiments not only that an excess of beef protein is capable of injuring the kidney of the rabbit, but also that the degree of the injury is dependent on two factors: the amount of protein ingested and the duration of the excessive protein ingestion.

There is an obvious objection to the use of the herbivorous rabbit in this type of experiment in that the results cannot be applied without qualification to omnivorous man. Furthermore, since the normal dietetic requirement of rabbits has not been worked out, it is possible that our diets may have been abnormal in some other regard than this protein content. For these reasons we are now studying the effect of diets containing varying amounts of protein on the kidneys of white rats. The experiments[3] are conducted according to the plan described and successfully used for many years by Osborne and Mendel. The diets contain all the factors that are necessary for growth and maintenance. In addition to using casein as the principal source of protein, as is the custom of Osborne and Mendel, we have employed dried powdered beef in the diets of about half the animals.

TABLE 3.—*Effect of High Protein Diet on Rabbits' Kidneys (Soy Bean)*

No.	Daily Protein	Months	Urine	Histology
5	Bean ad lib. (38% protein)	4	.....	Normal
15	Same	5-10	Albumin; casts	Cloudy swelling, atrophy and dilatation of tubules; casts
6	Stock	7	Normal	Normal

* From the Department of Internal Medicine, University of Michigan Medical School.
* Read before the Section on Practice of Medicine at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Newburgh, L. H.: Production of Bright's Disease by Feeding High Protein Diets, Arch. Int. Med. **24**: 359 (Oct.) 1919.
2. Newburgh, L. H.: Renal Injury Produced in Rabbits by Diets Containing Meat, Arch. Int. Med. **32**: 850 (Dec.) 1923.
3. To be published.

Tables 5 and 6 show in very brief form the effects of these diets on the urines of rats during the first year of the experiment. In the first place, diets containing excesses of protein produce urinary abnormalities in the omnivorous rat. In the second place, the rate at which evident abnormalities develop is dependent on the amount of protein fed and the length of time the diets

TABLE 4.—*Effect of High Protein Diet on Rabbits' Kidneys (Powdered Beef)*

No.	Per Cent. Protein	Months	Urine	Histology
8	37	5-7	Albumin; casts	Cloudy swelling; atrophy and dilatation of tubules; casts
33	27	To 6	Albumin; casts	Acute parenchymatous injury; casts
12	27	6-14	Albumin; casts	Cloudy swelling; atrophy and dilatation of tubules; casts

TABLE 5.—*Effect of Diets of Various Protein Contents on the Kidneys of White Rats* *

	Time Period									
	2 Months		4 Months		6 Months		10 Months		12 Months	
Protein, per Cent.	No.	Casts	No.	Casts	No.	Casts	No.	Casts	No.	Casts
8	5	0	5	0	5	0	..	..	..	..
12	10	0	10	0	10	0	..	..	..	..
16	5	0	..	..	4	0	..	..	..	..
18	10	0	18	1	14	0	9	0	7	0
25	..	..	20	5	24	16	13	9	12	10
32	..	..	17	10	24	19	18	12	15	14
39	6	1	26	15	24	22	17	17	13	13

* Number of animals and number showing casts in urine.

are used. These results justify the statement that protein above certain limits is injurious to the kidneys of omnivorous as well as herbivorous animals.

What element in the high protein diet is the one that is injurious to the kidney? We investigated a number of possibilities, including sensitization to the protein; absorption and elimination through the kidney of the ingested protein, as such; excessive urinary acidity; absorption and elimination by the kidney of toxic products of bacterial decomposition of the protein in the intestine; excessive excretion of urea, and accidental infections. In no case could we find evidence that any of these factors is responsible for the renal injury. Since protein is absorbed from the intestine as its amino-acids, it was thought possible that further information could be obtained by their injection into normal animals.

We have injected intravenously into normal rabbits and puppies twelve of the amino-acids that result from the digestion of protein.[3] Of these, no evidence of injury was obtained from glycin, alanin, phenylalanin, glutamic acid, leucin and arginin. Of the remaining six, aspartic acid was injurious to the kidneys of rabbits but not to those of dogs, whereas lysin, histidin, cystin, tyrosin and tryptophan gave unequivocal evidence of renal damage as the result of their injection into the circulation of both rabbits and dogs. In the cases of the last three, in particular, not only were marked urinary abnormalities obtained, but also the microscopic examination of the kidneys showed extreme parenchymatous injury.

It is thus demonstrated that these normal digestion products of protein are capable of injuring the kidney. Urinary abnormalities following the oral administration of certain amino-acids have been noted both by us and by others.[4] These facts corroborate our previous evidence that renal injury may be caused by simple protein excess. The experiments also bring us closer to an understanding of the ultimate relation between diet and the etiology of chronic nephritis. It should be pointed out in this connection that Folin, Berglund and Derick[5] have found in uric acid another normal nitrogenous metabolite that injures the kidney.

How may these experiments be interpreted in relation to the etiology of human chronic nephritis? Three answers are possible: (1) that protein is the sole cause; (2) that protein has no etiologic significance, and (3) that protein is one of several etiologic factors. That protein is not the sole cause of chronic nephritis is shown, among other things, by the fact that we have not in our experiments produced a lesion identical with that of human nephritis. Those who maintain that protein has no place in the etiology of chronic nephritis are supported by the fact that the data were obtained from animals. In answer, it should be pointed out that the injury was produced in rabbits, rats and dogs; it is difficult to conceive that a substance would damage the kidneys of herbivora, omnivora and carnivora without damaging the kidney of man. Furthermore, there is a considerable body of evidence tending to show that excess of protein may damage the kidneys of man; this question has been discussed by one of us.[6] It is our present belief that the third answer is the correct one, that excess of protein is a contributory factor in the etiology of chronic nephritis. For example, focal infection alone might not seriously damage the kidney. Excess of protein alone might not seriously damage the kidney. Focal infection and excessive ingestion of protein in the same subject are a combination of circumstances that commonly results in chronic nephritis.

It may at first be difficult to believe that an essential foodstuff is capable of damaging the kidney, but the following experiment shows how protein may be good

TABLE 6.—*Percentage of Rats Showing Casts on Diets of Varying Protein Content*

Protein, per Cent.	2 Months	4 Months	6 Months	10 Months	12 Months
8	0	0	0	..	..
12	0	0	0	..	..
16	0	0	0	..	..
18	0	6	0	0	0
25	..	25	66	69	83
32	..	58	79	67	83
39	17	58	92	100	100

TABLE 7.—*Effect on Rats' Kidneys of Varying Amounts of Cystin Added to Diets Containing No Protein Except 8 Per Cent. Casein*

Added Cystin, per Cent.	Number Rats	Per Cent. Showing Casts 30-90 Days	90-150 Days	150-210 Days	Average Weight Gain in 200 Days
None	5	0	0	0	76
0.25	4	0	0	0	135
0.75	4	0	25	100	142
1.00	4	0	100	100	144
1.25	4	0	50	75	127*

* All females.

or bad, depending on whether it is fed in large or small amounts. Osborne and Mendel[7] have shown that diets with no protein save 8 per cent. of casein will not grow normally. When they added 0.24 per cent. of cystin to this diet, good growth was obtained. With this in mind we are feeding five groups of rats the basic 8 per cent. casein diet with different amounts of cystin for

4. Lewis, H. B.: Effect of Repeated Administration of Small Amounts of Cystine on the Rabbit, J. Biol. Chem. **63**: 20 (Feb.) 1925.

5. Folin, O.; Berglund H., and Derick, C.: Uric Acid Problems, J. Biol. Chem. **60**: 361 (June) 1924.

6. Newburgh, L. H.: Etiology of Nephritis, Med. **2**: 77 (Feb.) 1923.

7. Osborne, T. B., and Mendel, L. B.: The Comparative Nutritive Value of Certain Proteins in Growth, J. Biol. Chem. **20**: 379 (March) 1915.

each group, varying from none to 1.25 per cent. added cystin. Inspection of Table 7 will show that the addition of 0.25 per cent. of cystin will produce as good growth as any of the larger additions. Hence, the smallest addition of cystin is enough. It will further be seen that the larger additions are harmful to the kidney, as evidenced by the cylindruria. Thus, while a small amount of added cystin is requisite to growth in this diet, several times the requirement not only adds no further benefit but is actually harmful. While a certain amount of protein is essential to life, it is our belief that amounts much beyond the requirement are nephropathic.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MORTENSEN; ALLEN, SCHARF AND LUNDIN; CHRISTIAN, AND NEWBURGH, MARSH, CLARKSON AND CURTIS

DR. LOUIS FAUGERES BISHOP, New York: Arteriosclerosis has been a hobby of mine for some time. Some years ago I was called on to write a book on the subject and that led to careful study of the literature and to certain conclusions. Dr. Mortensen emphasizes the constitutional nature of arteriosclerosis. He says it is a chemical disease, at least that is my inference, and his studies and observations are of great value. Arteriosclerosis, I believe, is a biologic disease, and his work falls in line with my studies of the last fifteen years, which have to do with the relation of proteins to the human body. The theory that I made the basis of my book was that arteriosclerosis is a disease of the whole body, and I developed a theory that it depends on a condition of the cells of the whole body, that condition being due to a sensitization of the cells of the body to some protein substance. Since that time a great deal of work has been done on sensitization, and I still believe that in general this theory is correct. For some reason or other, either hereditary or acquired, the cells of the body become sensitized to some particular protein, which acts as an irritant to the cells and gradually causes degeneration. Later, a change in the blood pressure develops, the kidneys are damaged and arterial changes follow. It is important to distinguish between arteriosclerosis and atheroma. The hardened arteries of very old persons, with the pipe-stem arteries at the wrist, are not arteriosclerotic; they are atheromatous. Arteriosclerosis is a development of scar tissue in the arteries. The logical outcome of this general theory that the disease is due to disturbances of the cells of the whole body is that certain treatment is indicated. I agree thoroughly with Dr. Mortensen as to the intestinal causation of arteriosclerosis, but I do believe that it is due to the effect of poisoning by some protein to which the body is sensitive; it may be from some infection or from some particular food, or it may be due to protein sensitization, which may very well be hereditary. The treatment directed to this condition is to reduce the number of proteins to the fewest. I do not believe in the low protein, but in the few protein diet. The body can deal better with a few proteins than with a great many, and there is a gambler's chance that the offending protein may be cut out. I have seen arteriosclerosis in persons sensitive to eggs or to beef, and I have seen a delayed effect on the cells from bacterial protein products. The use of castor oil is practical. Every patient with arteriosclerosis who comes to me gets a full dose of castor oil every other day for a week, then a full dose once a week, and after that one every two or three weeks. As long as they live, I have them take a full dose of castor oil every month. I have seen cardiovascular renal cases go along for many years in good condition, with a few protein diet and the castor oil regimen.

DR. WILLIAM D. REID, Boston: We should distinguish between arteriosclerosis without high pressure and arteriosclerosis with high pressure, such as arterial hypertension. Recently I published a paper attempting to put forward a different conception of what is back of arterial hypertension, and I should like to have my theory criticized. Arterial hypertension should be looked on as a condition of the circulation that is present during life, but not after death. It is therefore functional. When the patient is asleep or dies, the pressure falls. Many theories have been advanced and have been used as a basis of treatment, but today there is evidence against most of them. According to my theory, arterial hypertension is dependent on nervous system control of the blood pressure, a diminution of the vagal inhibition or an increase in the action of the sympathetic nervous system, or both. This physiologic explanation of hypertension does not tell us why one patient has it and another patient has not. The condition seems to be attributable to mineral metabolism, particularly a disturbed calcium metabolism. Dr. Mortensen referred to the hereditary element. To my mind the strongest argument against the theory of heredity is that of Eli Moschowitz, who states that these patients are subject to the same conditions of living and inherit the same habits of diet. Arterial hypertension is a matter of diet, particularly as regards its content of calcium and vitamins and of exposure to sunlight.

DR. BENJAMIN JABLONS, New York: The relationship of arteriosclerosis to meat feeding is a subject that does not receive as much attention as it might. Weinberg, of the Pasteur Institute in France, carried out anatomic studies in carnivorous and herbivorous animals. The carnivora, even among birds, show no changes in their blood vessels, while in all herbivorous animals there are extensive arteriosclerotic changes, especially in rabbits, horses and cattle. This is important in connection with carbohydrate feeding and hypertension. There is a closer relationship between carbohydrate overfeeding and anatomic changes in the blood vessels than there is with protein overfeeding. In thrombo-angiitis obliterans, the patients who show very extensive vascular obliteration have often a low blood pressure. It seems strange that when the vascular field is so extensively damaged, these individuals should not have high blood pressure. The question of essential hypertension in relation to vascular changes is not yet answered. Some cases of essential hypertension show peculiar findings. They bring out what Dr. Christian emphasized, that the nitrogen figures in the blood are not of great importance. Many show no nitrogen retention, yet when studied by the dye excretory tests, such as phenolsulphonephthalein, there is a definite failure to excrete dye. The element responsible for the production of hypertension is not obliteration of the vascular field. It is perhaps methylguanidin or some other substance that produces a systemic effect on blood vessels which is responsible for the increase of the pulse pressure. I think too much attention is paid to organic change in blood vessels as a possible cause of hypertension. In view of these findings, might we not divert our attention from the rôle of protein overfeeding to the more fruitful field of carbohydrate overfeeding and blood vessel change?

DR. EUGENE STERLING KILGORE, San Francisco: Dr. Christian brought out the well known yet always rather surprising fact that patients with chronic interstitial nephritis rarely give a history suggesting a previous acute nephritis, and we are left with the impression that he regards chronic nephritis as always or nearly always developing without the occurrence of a preliminary acute nephritis. The facts in our possession do not seem to me sufficient to warrant any conclusion on this point. Almost all clinical investigation of chronic interstitial nephritis so far has been conducted in institutions whose material is practically limited to advanced stages of the disease, and the histories are obtained from patients usually of lesser intelligence. Furthermore, the kidney is practically a silent organ symptomatically; when, by chance, in routine examinations we occasionally discover a case of acute nephritis, there are as a rule no symptoms except perhaps a little sore throat and slight malaise. It is very rare that these cases can be followed through life to determine their subsequent kidney history. Until we know more about the natural history of chronic interstitial nephritis, we should increase rather than relax our efforts to find the acute cases by urine examinations, especially during acute and supposedly trivial infections. Aside from this practical aspect of the nephritis problem, it is well that we keep in mind our really

quite profound ignorance of the early stages of the degenerative diseases in general. The family physician has special opportunities to observe these beginnings of disease, and I hope that the present movement to encourage periodic examinations of the apparently healthy will in time enrich our knowledge in this neglected field.

DR. ELLIOTT P. JOSLIN, Boston: Two practical points may be suggested in the performance of routine urinary examinations. Whereas the twenty-four hour specimen of urine is valuable for the estimation of the albumin, total nitrogen and total salt, it is not a good specimen for examination of the urinary sedimenta. Since we have made it the rule to examine the sediments of fresh specimens, the percentage of casts has increased materially. At the hospital we also make it a rule that urine specimens which are not to be promptly examined must be transferred to the ice chest. The second point is a simple one, but promotes neatness and saves time. All urine specimens at the New England Deaconess Hospital are now sent to the laboratory in 3-ounce cylinders, such as one employs for determining the specific gravity. In this way we avoid transferring the specimens, with attendant risks of confusing labels, and we also save much time because the specific gravities can be determined in the cylinders received. With 20,000 urinalyses to do, it is worth while saving half a minute in the analysis of each.

DR. HERMAN SCHWARTZ, New York: I have followed acute nephritis for fifteen years, and I am impressed with the fact that acute hemorrhagic nephritis in children is not a disease that is curable. The blood pressure readings show that the patients have gradual increase in blood pressure. A practitioner in a small town has an opportunity to follow these cases for years, and if he does this it will be a profound service to the profession. Younger men could follow such cases for twenty-five years, from early childhood to adult life. The problem of chronic nephritis in adults perhaps begins frequently with acute kidney conditions in childhood. Chronic nephritis with edema is a disease that is fairly rare in childhood, but not so rare as in adult life. The clinical picture that has as its main symptom a chronic recurring edema with albumin in the urine and cholesterol in the blood is different from chronic nephritis without edema. One point which should be emphasized is that this chronic recurrent edema has a fluid which is different from the fluid of the occasional edema in acute conditions. An albumin reaction on the fluid from the nephrosis indicates that there is almost no albumin and 0.01 per cent. nitrogen. Chronic nephritis, with blood pressure, or acute nephritis has a tissue fluid that contains much albumin. I think that chronic nephritis with edema, of which Dr. Christian has had five cases in adults, has nothing to do with the kidneys but is a disease of the tissues. I have seen about twenty-five cases in children.

DR. M. A. MORTENSEN, Battle Creek, Mich.: There is a group of diseases, such as arteriosclerosis with hypertension, migraine, bronchial asthma and gout, in which there is a metabolic disturbance in the nature of protein sensitization. This appears to be hereditary and is in keeping with Dr. Bishop's remarks on protein sensitization, with reference to the theory of a low protein versus a few protein diet. Few proteins are of value in many cases, but I still think that we must limit the total intake of protein to a physiologic limit. It is unnecessary to limit the protein to either vegetable or animal, but in the advanced cardiovascular renal cases I prefer the vegetable protein. We should not give the patient more protein than is physiologically necessary. Anything beyond this will be a strain to the cardiovascular renal system. I read Dr. Reid's paper with much interest when it was published. I am not in a postion to understand the question of arterial hypertension from a standpoint of nervous system control, but I agree that anxiety increases arterial tension. However, if we try to eliminate the patient's anxiety when taking the blood pressure, we shall usually reach a level at which the readings are a true indication of blood pressure under ordinary conditions. I do not consider thrombo-angiitis obliterans in the same class as the arteriosclerosis or cardiovascular renal disease. I recently saw a patient with extensive thrombo-angiitis obliterans on whom there had been toe amputation because of gangrene; the blood pressure was only slightly increased. The blood pressure in these cases depends on the extent of involvement of the larger arteries. I should like to emphasize what Dr. Kilgore said as to the value of periodic examinations. This applies particularly to cardiovascular renal disease as well as to the cases referred to by Dr. Christian, because in this way we shall find early evidences of the disease. Therapy is of little curative value unless begun early in the course of the disease, and if the condition is discovered only in the late stages, then little impression can be made by any form of therapy. I want to emphasize the importance of careful history taking. It is one of the most important means we have of evaluating the patient's condition. It will reveal cardiovascular renal disease in the family history as well as in the individual and will discover other conditions as well. In this group of cases, if we find that a cardiovascular renal complex exists in the family, we are justified in emphasizing to this family the importance of a properly balanced diet. The protein intake should be limited to physiologic needs, and the salt intake should be kept within reasonable limits. In the children of such families, this program may delay the time at which cardiovascular renal disease manifests itself. In regard to salt free diet—I studied the salt elimination in cardiovascular renal disease without edema a number of years ago, and I found little evidence of salt retention. I have tried salt free diet without success. I should like to have Dr. Allen tell us what he does besides eliminate the use of salt.

DR. P. L. MARSH, Ann Arbor, Mich.: I did not say in my paper that rabbits on a high protein diet develop sclerosis of the aorta. I think spontaneous atherosclerosis does occur in rabbits, but it is different from the lesion of the human sclerosis. It is a disease of the media rather than the intima. The rabbits develop a lesion that cannot be distinguished from human atherosclerosis. Excess of protein damages the arteries. Under treatment, protein is diminished by most physicians. It is important that we should have actual experimental evidence for the background of our treatment; namely, that high protein diet in an animal will cause sclerosis of the aorta.

DR. F. M. ALLEN, Morristown, N. J.: It is interesting to note that in this whole discussion, from the topic of heredity to Dr. Christian's paper on classification and etiology, the theme of functional influences has run through the symposium. The hereditary factor must impress everybody who studies these cases. It is undoubtedly more prominent than is revealed by ordinary histories, and close questioning is always needed. If "asthma" is mentioned in a relative, it may be found to be not a true bronchial asthma but a symptom of unrecognized renal-vascular disease. We have been interested in observing the rôle of sodium chlorid in successive generations, and the influence of its restriction in controlling cases with an hereditary history and in preventing the development of these disorders in the younger members of these families. Observations of this sort may be of interest in the next twenty-five years. The work of Newburgh and Marsh stresses the same functional theme; namely, the rôle of diet in producing renal-vascular disease.

The chief clinical objections to the work of Newburgh and Marsh are three. First, the lesions produced by the protein diets in their experimental animals are not the same as found in human patients. Second, there is no parallelism between the incidence of renal-vascular disease and the protein content of the diet. The Eskimos are said to be relatively free from such diseases, while the Bengalese on their vegetarian low protein diet are highly subject to it. Third, there is no parallelism between nitrogen retention and hypertension or arteriosclerosis. Though we consider protein restriction necessary in all cases of nephritis with impaired nitrogen excretion, we have given red meats and other proteins liberally to patients with hypertension and arteriosclerosis whose nitrogen excreting function seemed normal. In six years no progressiveness of these cases has been found under this policy. Dr. Christian has simplified the nomenclature by breaking away from the pedantic rule of the pathologists that the termination *itis* must not be used unless the condition can

be proved to be inflammatory—a rule which the pathologists have not enforced in other organs than the kidney. Though the question of origin is not decisively settled, I am inclined to the view that all ordinary cases of renal-vascular disease start from infectious or toxic injury. On this, in the course of years, is superimposed the damage from metabolic wear and tear, and thus occurs the slow development of that majority of cases which Dr. Christian describes. Protein doubtless plays a part in many nephritis cases, but I believe the injury in the predominantly vascular type of cases is chiefly from salt. We have tried to furnish evidence for this view, and have also described the method of treatment, in several publications. Advances must be made not by the old clinical custom of stating beliefs or general impressions, but by presenting detailed experimental or clinical proof for any opinion held.

DR. HENRY A. CHRISTIAN, Boston: My theme was not based on any particular interest in the terminology of classification but my interest lay chiefly in emphasizing the value of a simple classification. Any other terminology and grouping, equally simple, would be acceptable. I think that heredity plays a large part in the vascular group, or what I called "chronic nephritis without edema." How it works I do not know. We are all extremely interested in what Marsh, Newburgh and Allen are doing. We feel that they are getting important results; we are learning more about this question of renal disease each year from their reports. It does not make any difference whether they succeed in producing in animals a disease identical with chronic nephritis in man; they are producing conditions under experimental control which they are studying in a way to throw light on our clinical problems. I agree with Dr. Joslin as to the importance of examining fresh specimens of urine. It is a question of the patient, the physician and the microscope. The best time to examine urine specimens is when we are making other studies on the patient, and we should familiarize ourselves with what the microscope shows. The longer one delays the urine examination and the more one depends on a technician, the less one will get out of it. If the urine stands, many casts may disintegrate. The twenty-four hour specimen has a distinct value, but both should be studied. In regard to the question of acute and chronic nephritis, I am glad that Drs. Kilgore and Schwartz have made these observations. My own observations have not established a relationship between acute and chronic nephritis in the sense of one progressing into the other. Their observations are more suggestive of this relationship. I do not mean to decry the value of blood chemistry, but I say that one can get on without it. Determinations of total nonprotein nitrogen or of urea suffice. Creatinin determinations do not add much of value and may be misleading. Uric acid figures throw no light on the nephritis problem, in my experience. The general practitioner has the opportunity to follow patients in regard to the early stages and the progress of disease, and it is important that they should do so. Such observation by practitioners will be of great value in the solution of the problem of nephritis as well as other problems. The practitioner is in a postion to carry out certain studies better than can be done in the hospital or in the laboratory. Hospital observation and laboratory study, on the other hand, can make studies not possible to the practitioners. A combination of the two will give more valuable results than either one singly.

County Health Service.—County health service, under the direction of whole-time health officers, has become an integral and important part of the public health machinery in many states. Each year it assumes a more important place in the state health programs as additional counties avail themselves of this service and as those health authorities who are interested in one or another special phase of health administration realize that a county health department furnishes the best means for conducting in rural districts each special health activity as a part of a general health program.—Parran, Thomas, Jr.: *Pub. Health Rep.* **40**:983 (May 15) 1925.

AUTOHEMAGGLUTINATION IN CHRONIC LEUKEMIA

REPORT OF CASE *

HARRY L. ALEXANDER, M.D.
AND
LAWRENCE D. THOMPSON, M.D.
ST. LOUIS

Although autohemagglutination has been observed in animals under various conditions [1] and may be induced experimentally in some of them,[2] its occurrence in man is rare. The phenomenon was first noted by Reitmann [3] in 1890, occurring in the blood of a patient with cirrhosis of the liver, and its probable appearance was noted by several other observers during the next two decades.[4] In 1903, however, an accurate study of this reaction was begun by Landsteiner,[1] which was later elaborated by Yorke [5] in 1911, and by Clough and Richter [6] in 1918. As a result, certain characteristic features were established. It was found that in various animals and in man in whom autohemagglutinins existed, the red blood cells would clump or gather together in masses when the separated serum and cells of shed blood were brought together under certain conditions. Among these were the following: 1. This clumping occurred only at temperatures lower than body temperature and was most marked at 0 to 10 C. 2. The cells that were clumped at a low temperature, on being heated to 37 C., would disperse again soon to form a homogeneous suspension. 3. The "agglutinin," or substance in the serum responsible for this reaction, was found to act, not only on the cells of the same individual at low temperatures, but also on the cells or other members of the same species and on the cells of members of different species. Various other characteristic properties were noted.

It is maintained by Yorke [5] that true autohemagglutination occurs quite frequently in trypanosome infections both in man and in animals. In other clinical conditions in man it is apparently of extremely rare occurrence. Aside from those noted by Yorke, only four cases have been found reported in sufficient detail to establish definitely the presence of true autohemagglutination. The cases were: bronchopneumonia; [6] a severe secondary anemia in a pregnant woman; [7] pneumonia following the therapeutic injection of the patient's whole blood,[8] and pernicious anemia with subacute combined sclerosis.[9] Although some criteria were lacking, autohemagglutination has been reported and may have occurred in the following clinical conditions: cirrhosis of the liver (Reitmann [3] and Dudgeon [4]); long-

* From the Department of Internal Medicine, Washington University School of Medicine, and Barnes Hospital.

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2. Nathan-Larrier: Bull. Soc. de path. exot., 1910, p. 425. Rous, Peyton; and Robertson, O. H.: J. Exper. Med. **27**: 509 (May) 1918; ibid. **27**: 563 (May) 1918.
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4. Kanthack, A. A.; Durham, H. E., and Blandford, W. F. H.: Proc. Roy. Soc. B. **74**: 100, 1898. Christy, C.: Brit. M. J. **2**: 1456, 1904. Dutton, J. E., and Todd, J. L.: Mémoir of the Liverpool School of Tropical Medicine, 1903, No. 16, p. 99. Martin, G.; Lebocuf, and Roubaud, E.: Rapport de la mission d'études de la maladie du sommeil au Congo français, 1906-1908, p. 281. Martin, C., and Darré, H.: Bull. et mém. Soc. méd. d. hôp. de Paris, 1909, p. 599. Dudgeon, L. S.: Proc. Roy. Soc. B **81**: 207, 1909. Todd, J. L.: Bull. Soc. de path. exot., 1910, p. 438.
5. Yorke, W.: Ann. Trop. Med. & Parasitol. **4**: 529, 1911.
6. Clough, M. C., and Richter, I. M.: Bull. Johns Hopkins Hosp. **29**: 86, 1918.
7. Kligler, I. J.: Autohemo-Agglutination of Human Red Blood Corpuscles, J. A. M. A. **78**: 1195 (April 22) 1922.
8. Claveaux, E., and Sanchez, P.: Rev. méd. d. Uruguay, Montevideo **27**: 49, 1924; abstr., J. A. M. A. **83**: 879 (Sept. 13) 1924.
9. Cohen, H., and Jones, A. R.: Lancet **2**: 853 (Oct. 25) 1924.

standing epilepsy (Dudgeon[4]); trypanosomiasis (Kanthack, Durham and Blandford,[4] Christy,[4] Dutton and Todd,[4] Martin, Leboeuf and Roubaud[4]); icterus due to hemolysis (Martin and Darré[4]); relapsing fever and syphilis (Todd[4]), and severe anemia with splenomegaly (Debeneditti,[10]).

In these cases the demonstration of a true autohemagglutinin has not been adequate, as the characteristic features established by Landsteiner and his followers have not been recorded. As suggested by Mino,[11] excessive rouleaux formation may have been mistaken for true autohemagglutination in many of these cases.

REPORT OF CASE

History.—J. R., an American, aged 48, who entered the Barnes Hospital, April 13, 1925, complained of weakness, pallor and swelling of the feet. In his large immediate family there was nothing suggestive of a blood dyscrasia other than the death of one brother at the age of 24 from "swollen glands." The patient recalled no childhood diseases or other illnesses bearing on his present condition until he was 25 years of age. At that time he had several attacks of acute right lower abdominal pain extending over a period of two months. The condition was diagnosed "appendicitis," but no operation was performed. He then had good health until the age of 34, when he again suffered severe pains in the abdomen, particularly in the upper portion. These pains came in paroxysms and were associated with deep jaundice, which lasted five months. Since then, the patient suffered frequently from "indigestion," manifested by a feeling of fulness after eating, and belching of gas. The condition was treated by various diets, tonsillectomy and internal medication. The patient had gonorrhea at the age of 20, but gave no history of syphilis. His wife had one normal delivery, a son now living and well, one stillbirth, and no miscarriages. There was no history of excessive alcohol or nicotin indulgence. The patient had always worked in one factory where wooden boxes were constructed.

Three years before admission (age 45), the patient developed a fever and had an occasional chill. This condition was diagnosed "malaria," although it occurred during the winter months. Following this attack he felt numbness, tingling, and severe sharp pains in the fingers, forearms, toes, legs and face whenever he was exposed to the cold. The extremities and face would become so blue that his friends would comment about his remarkable appearance. These symptoms would disappear shortly after entering a warm atmosphere. He had no recollection of abdominal pain at these times, but stated that he urinated frequently and that the urine resembled port wine in color. The onset of the attacks was soon followed by weakness. The patient was easily fatigued, and pallor became noticeable. Similar attacks occurred in the following winter, with entire freedom in the summer months. There were no attacks during the past winter when the patient was too ill to be outdoors. Six months before admission, he was obliged to stop working, because of weakness. Recently he acquired dyspnea, palpitation on exertion, edema of the feet, and dizziness. Four days before admission a blood transfusion was given, which was followed by a marked reaction. This reaction, from the story of the patient, must have been severe. It was later determined that the donor used was incompatible.

Physical Examination.—The pathologic findings were as follows: There was marked pallor of the skin, associated with a faint yellow tint. The mucous membranes were pale, and the sclerae bluish white. The panniculus was somewhat loose, and the muscles were soft. No petechiae or purpuric spots were found. There was slight edema of the feet. The superficial lymph nodes were slightly enlarged. The tongue was pale but not glossy. The teeth for the most part were replaced by plates, and the few remaining ones were dirty, with surrounding gingivitis. The lungs were hyperresonant excepting at the right base, where there was dulness and where the breath sounds were diminished. This change was probably caused by a large liver. Elsewhere, breath sounds were unimpaired, with the exception of a few crackling râles at both bases posteriorly. The heart was essentially normal, aside from an occasional extrasystole. The peripheral vessels were not thickened. The systolic blood pressure was 136; the diastolic, 85. The abdomen was slightly above the level of the costal margin. The liver edge was palpated 10 cm. below the tip of the ensiform cartilage and 9 cm. below the costal margin in the midclavicular line. The spleen was just palpable, but the splenic area was somewhat enlarged to percussion. Careful neurologic examination revealed no abnormalities.

Laboratory Findings.—An accurate red blood cell count was difficult to make as the result of the immediate clumping of the cells in the diluting fluid. When, however, precautions were taken to use a warm pipet, warm diluting fluid and warm stage, an approximation was made possible that indicated a count probably somewhat below one million. The hemoglobin was 20 per cent. (Dare). The white blood cells varied from 24,000 to 45,000, and a typical differential count was as follows: polymorphonuclears, 19 per cent.; small lymphocytes, 30 per cent.; eosinophils, 1 per cent.; endothelial leukocytes, 5 per cent.; transitionals, 2 per cent. Abnormal cells were: myelocytes, 7 per cent.; myeloblasts, 11 per cent.; lymphoblasts, 25 per cent. There were two normoblasts per hundred white blood cells. The myeloblasts and lymphoblasts were differentiated by their reactions to the vital stains janus-green and neutral red, according to the technic described by Sabin.[12] The red cells showed a moderate degree of anisocytosis and poikilocytosis; the platelets appeared normal. No parasites were found. By carefully washing the cells at incubator temperature, it was possible to type the blood, which was found to be Group I (Jansky). The blood Wassermann reaction was negative to cholesterol and alcoholic antigens. A fragility test showed hemolysis, which began in 0.46 per cent. and was complete at 0.38 per cent. sodium chlorid solution. The clot retracted normally. The surface tension of the serum was 61 dynes (drop weight method). Blood cholesterol in the plasma was 0.113 per cent.; in the cells, 0.130 per cent. Gastric analysis of the fasting contents revealed free hydrochloric acid absent; total acidity, 7 degrees; extraction one hour after test meal revealed free hydrochloric acid, 4.5 degrees; total acidity, 22 degrees. The guaiac test for occult blood was negative. The stool examination showed no notable abnormalities. Spinal fluid, 12 c.c., was clear and under normal pressure; there were 2 cells; a test for globulin (Pandy) was ++; the colloidal gold curve was 1111100000. The Wassermann reaction was negative in all dilutions. The basal metabolism was 30 per cent. above normal.

Course in Hospital.—April 17, a blood transfusion of 500 c.c. given by the direct method from a Group I (Jansky) donor was followed by no reaction. Ten days thereafter the autohemagglutination became much more marked, and it was impossible to make a blood smear unless the slide had been heated previously. About this time, the spleen began to enlarge perceptibly, and on May 18 the lower edge could be felt 9 cm. below the costal margin. May 28, a second transfusion of 500 c.c. of whole blood, given from a compatible donor, was followed by a slight chill accompanied by generalized muscular pain. In addition to the transfusions, six doses of neo-arsphenamin totaling 2.25 gm. were given. A red count, just before discharge, showed 1,200,000 cells and 35 per cent. hemoglobin (Newcomer), and differential counts varied little throughout his stay in the hospital.

TEST FOR AUTOHEMAGGLUTINATION

In order to confirm the presence of true autohemagglutination, blood was drawn from a vein into a Luer syringe, previously heated to 40 C.; it was transferred to a flask, which was immersed in a warm bath, immediately defibrinated, and finally filtered through paper on a "hot filter." The cells and serum were separated by centrifugalizing, with precautions to maintain a warm

10. Debeneditti, V.: Policlinico (sez. med.) **31**: 311 (June) 1924.
11. Mino, P.: Policlinico (sez. med.) **31**: 69 (Feb.) 1924.
12. Sabin, F. R.: Bull. Johns Hopkins Hosp. **34**: 277 (Sept.) 1923.

temperature by surrounding the tubes with warm oil in the centrifuge cups. The serum was removed by pipet and placed on ice. The cells were washed six times with warm sodium chlorid solution (0.85 per cent.), and a 2 per cent. suspension of the cells was made in the saline solution. Diluted serum (0.5 c.c.) was added to each of a series of tubes already containing 0.5 c.c. of ths suspension of cells. Sodium chlorid (0.85 per cent.) was used to dilute the serum, the final dilution in the tubes being 1:20, 1:40, 1:80, 1:160, 1:320, 1:640 and 1:1,280. Two tubes were used as controls, the one containing merely the cells suspension further diluted with saline solution and the second containing 0.5 c.c. of the suspension and 0.5 c.c. of a 1:20 dilution of normal Group I (Jansky) serum. The tubes were placed in the ice chest at 14 C. for twenty minutes. Marked clumping occurred in all dilutions, while no clumping occurred in the control tubes. The agglutinated cells, which appeared as a mass at the bottom of the tube, could be separated into rather large clumps by shaking. Microscopic examination revealed marked agglutination. The tubes were then placed in a water bath at 37 C., in which there was a complete dispersion of the clumps both macroscopically and microscopically within fifteen minutes. In the ice chest the clumps reappeared. This process was repeated three times. The controls showed no clumping at any time. No hemolysis could be demonstrated.

That the serum would act in a similar manner on cells of other species was demonstrated by repeating the foregoing test, sheep cells being used at one time and rabbit cells at another. The highest dilution of serum used with rabbit and sheep cells was 1:320, when moderate agglutination occurred. The action of the serum on the cells of other species was exactly the same as that which was observed when the patient's own cells were used.

COMMENT

The exact classification of the leukemia is uncertain. The diagnosis of chronic myelogenous leukemia is suggested by the consistent appearance of relatively large numbers of myelocytes and myeloblasts in the circulating blood. On the other hand, the presence of lymphoblasts, together with the increase in the absolute number of normal lymphocytes, suggests the possibility of a lymphatic type of the disease.

The history of cyanosis of the extremities on exposure to cold, followed by the passage of port wine colored urine, is suggestive of paroxysmal hemoglobinuria, although no hemolysin could be demonstrated on repeated attempts while the patient was in the hospital. A negative blood Wassermann reaction on four occasions argues against this diagnosis. Because of the profound anemia it did not appear justifiable to attempt, deliberately, to induce hemoglobinuria by chilling the extremities.

Clough and Richter [6] found traces of autohemagglutinins in the blood of the daughter of their patient, and suggested an hereditary tendency. The blood of the son of the patient here reported was carefully studied, but no evidence of autohemagglutinins could be demonstrated.

Robertson and Rous [2] have been able to induce autohemagglutination in the blood of rabbits by repeated transfusions. In the case reported by Claveaux and Sanchez,[8] this condition was shown after repeated injections of the patient's own blood. It is interesting to note that the patient had received a transfusion from an incompatible donor (Group II [Jansky] to Group I [Jansky]) just prior to admission, and also that the autohemagglutination became even more marked following a second transfusion from a compatible donor.

SUMMARY

True autohemagglutination has been observed in a case of chronic leukemia of undetermined type.

The autohemagglutination satisfies the criteria established by Landsteiner, Yorke, and Clough and Richter, by possessing the following characteristics:

(*a*) Agglutination occurs only at temperatures below body temperature.

(*b*) The agglutinated cells disperse when the temperature is raised again to body temperature.

(*c*) The agglutinin will act in like manner on human cells and on cells of various animals.

The patient's symptoms at one time suggest that he had paroxysmal hemoglobinuria, although no autohemolysin could be demonstrated recently.

600 South Kingshighway.

INDUCED HYPERTHYROIDISM

O. P. KIMBALL, M.D.

CLEVELAND

In view of the large number of articles on the use, abuse and dangers of iodin in the treatment of goiter that have appeared during the last year, further statements along this line may seem superfluous. Our experience, however, in the service with which I am connected, leads us to believe that there must be considerable misinformation or misunderstanding regarding the proper use of iodin in the treatment of goiter, and that a brief statement of our experience with patients in whom hyperthyroidism has resulted from the use of iodin in cases of goiters of long standing may serve as a warning to those who first see these patients.

Nothing has been added to the knowledge of the relation of iodin to the normal function of the thyroid gland established by Marine [1] and his associates. Our experience agrees with the statements by Marine, Graham and others that there is no consistent pathology of goiter; that is, the clinical findings do not indicate specific pathologic changes in the gland, and the histologic pictures of the thyroid do not indicate definite clinical entities.

In order to determine if possible whether or not harm may result from the routine use of iodin in the prophylaxis of goiter as it has been carried out in this district since 1917, a study has been made of those cases of hyperthyroidism in which some form of iodin has been administered.

In the series of 2,659 cases of hyperthyroidism treated by us during the four and one-half years between March 5, 1921, and Sept. 1, 1925, there were 309—263 women and forty-three men—in which it appeared that the symptoms of hyperthyroidism had been precipitated or made worse by the use of iodin. In 210 cases, or 68 per cent. of the whole series, the goiters were of long standing, the average period being eighteen years. In each of these cases, the gland was clinically or microscopically adenomatous.

1. Marine, David: Etiology and Prevention of Simple Goiter, Medicine **3**: 453-479 (Nov.) 1924; Functions of the Thyroid Gland, Physiol. Rev. **2**: 521-551 (Oct.) 1922; The Importance of Our Knowledge of Thyroid Physiology in Control of Thyroid Diseases, Arch. Int. Med. **32**: 811-827 (Dec.) 1923.

In this group of 309 cases, there were six cases in which the only source of iodin had been iodized salt. All of these patients were women past 40 years of age, and each had a nodular goiter of long standing. Several others had a similar history, and we were about to include them with this group, but on further investigation we found that they were also taking iodin, which had been prescribed, in such quantities as to make the amount of iodin received in the iodized salt appear negligible. It should also be stated here that we have often seen toxic adenomas in middle aged women who have not taken iodin.

Induced Hyperthyroidism

Total number of cases of hyperthyroidism	2,659
Total number of cases of induced hyperthyroidism	309 (11.6 per cent.)
Induced by:	
Iodized salt	6 (2 per cent.)
Self medication	37 (12 per cent.)
Medical treatment	266 (86 per cent.)

Thirty-seven patients had taken iodin of their own volition; several had taken a solution of sodium iodid, but the great majority had used repeated external applications of tincture of iodin over the goiter.

The most striking fact brought out by our study is that five sixths of our patients having induced hyperthyroidism had been taking iodin as prescribed by their physicians. In twenty-one cases of goiters of long standing, compound solution of iodin (Lugol's solution) had been given for weeks, in doses of from 5 to 10 drops, three times a day. In many cases, 5 drops of the solution of sodium iodid, three times a day, had been prescribed, and a considerable number of these patients had taken this medication for as long as three or four months. One boy, aged 16 years, who had a congenital adenoma, had taken syrup of ferrous iodid, 1 dram (3.75 c.c.), three times daily, continuously for eighteen months. Suffice it to say that in 84 per cent. of the cases of toxic goiter which we have seen, the physicians had prescribed large doses of iodin to be taken over a long period of time, and this treatment had been given in spite of the fact that the goiter was of long standing and in many cases, nodular in type.

In all cases of iodin treatment, the dosage should be considered in terms of milligrams. The maximum dosage for an adult, provided there are no contraindications, is 10 mg. daily for not longer than one month, during which time the patient should be under very close observation. As we suggested two years ago,[2] we have prescribed one iodostarine tablet to be taken daily throughout alternate months, and we have seen no toxic symptoms resulting from this treatment. That even this small amount of iodin should be used with caution, however, is illustrated by the history of a man, aged 29, who recently came to us with a marked hyperthyroidism. His mother and three sisters had goiters, and he had had a small goiter since childhood. This had started to enlarge about five months before we saw him, and his physician had given him three iodostarine tablets daily for over three months; that is, he had been taking one-half grain (0.03 gm.) of iodin daily for 100 days. Even with the small dose of one iodostarine tablet daily during alternate months, the patient should be under close observation by his physician.

2. Kimball, O. P.: Prevention and Treatment of Simple Goiter, J. Michigan State M. Soc. **22**: 390-393 (Sept.) 1923.

As has often been stated, and has recently been emphasized by Jackson,[3] long standing goiters in adults should be treated surgically, if any symptoms of hyperthyroidism are present. In young adults and in adolescents, medical treatment should first be tried; but in this treatment, as stated above, we should always think of iodin in terms of milligrams rather than of grains.

I think we can safely say that there is no danger in the routine prophylaxis of goiter as it is carried out through the schools; namely, the administration of 10 mg. of iodin weekly. Among our forty cases of exophthalmic goiter in children, only one child had been given iodin. In this case the patient had received the prophylactic treatment of 10 mg. of iodin a week for one month, three months before the onset of the acute hyperthyroidism, and a review of the history shows that it is only fair to assume that the onset of the hyperthyroidism in this case was a coincidence and not a result of the month of iodin treatment. With the thousands of girls taking the prophylactic treatment, similar coincidences should be expected in the future.

As indicated above, our studies show that toxic goiters may result from the use of iodized salt in cases of adenomas of long standing; here again, however, these cases may be entirely coincidental, and too much emphasis should not be placed on this point.

In the medical treatment of goiter in adults, we wish to emphasize the importance of care in the selection of cases; the use of small amounts of iodin for not longer than one month, and the necessity of close observation throughout this period.

Euclid Avenue at Ninety-Third Street.

THE PROBLEM OF MALIGNANCY *

A. E. BARCLAY, M.D. (CANTAB.)
MANCHESTER, ENGLAND

"By Doubting we come to Truth."
—*Cicero.*

"Who never doubted, never half believed,
Where doubt, there Truth is."
—*P. J. Bailey.*

The history of medicine during the last century is one of the great romances of the world, corresponding to that wonderful epoch in history when Columbus set forth on his voyage of discovery and the Portuguese, rounding the Cape of Good Hope, found their way to India and the East.

As in the sixteenth century, so today in medicine, whole new worlds have been opened up by those who, using the microscope and laboratory methods as their vessel of discovery, have navigated and charted the new worlds of science. Once more, as when the Spanish and Portuguese divided the known and unknown world between them, there is a dividing line, imaginary, no doubt; and, on the one side, we have the possessions and observations of the old order of naked eye or microscopic observation, and, on the other, the accurately mapped new fields that have fallen to the microscope. The mass of microscopic discovery has added so greatly to the sum of medical knowledge that today it is a human impossibility to master the whole of it, while the older macroscopic knowledge and observation have,

3. Jackson, A. S.: Iodin Hyperthyroidism, Am. J. M. Sc. **130**: 271-283, 1925.

* Read before the meeting on radiology in the Section on Miscellaneous Topics at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

by comparison, been almost eclipsed. Yet, with all the advances, there is one problem on which even the microscope seems to shed no new light, i. e., the cause of cancer; for all will agree that, in spite of the world-wide research and the voluminous writings on the subject, we know practically nothing more than our fathers as to the nature of human cancer.

In the last twenty-nine years, however, a new light has crept in on this dread and growing scourge (300 per cent. increase in the last seventy years), one which has not, I think, received the consideration it should have, especially from the macroscopic point of view, for investigators of the problems of disease are all looking to the microscope to aid them in discovery, and the new type of radiations do not fall within its field of vision. In the case of cancer, the eyes of all radiologists have been turned on the definite but elusive curative effects of the new rays and, maybe, we have neglected to note "the writing on the wall" as we pushed onward with more and more powerful radiations in our search for the cure of the disease.

We have written of our successes and failures in treatment, and of the tantalizing uncertainty of our results, and we have recorded the roentgenographic appearance of cancer, but have we stopped to take stock and think what these things mean? Have we turned to examine our observations from the point of view of the nature of the disease, quite apart from any thought of the cure? Or have we also been content to take it for granted that the microscope, and the microscope only, is the chosen vessel of discovery? When Columbus saw the failure of the Portuguese navigators in their search for the Indies, he decided to set sail in the opposite direction on his voyage of discovery, for it was obvious that the fabled Indies must lie somewhere. So, in like manner, let us look in the opposite direction, forsake the microscope and the assumption of its infallibility, and consider a variety of radiologic and clinical observations for which I claim no originality or expert knowledge, and which are of the older macroscopic school.

Under roentgen-ray and radium treatment, the cure or arrest of the progress of some malignant growths is a definite fact, and we know with certainty that we have applied some factor which has altered the normal course of events. Many of our observations, however, are matters that are not susceptible of scientific proof, but are commonly accepted by those who practice radiation therapy. Others again are matters of surmise only, resting on no definite scientific data, in which, from long experience, one has a definite impression, a clinical sense, which may or may not be shared by others.

RADIOSENSITIVE AND RADIO-INSENSITIVE CANCERS

Under the generic term "cancer" we include a number of diseases that are characterized by cell overgrowth, and that normally end in the death of the patient. The two great groups of the carcinomas and sarcomas are subdivided, by the microscope, into a number of less clearly defined varieties; but in the natural course of events, they all carry the one definite common factor, death, as their ultimate termination. Some are rapid in their course, others less so. Some tend to extend locally only, others to rapid dissemination, and, generally speaking, the microscopic examination of the type of cell will give an indication of the prognosis. Yet every surgeon and every radiologist occasionally encounters an apparently hopeless growth that melts away as if by magic, while an exactly similar case, microscopically and macroscopically, runs its course entirely uninfluenced by the same treatment. In the early days of radium, Wickham recorded the apparent cure of a carcinoma of the uterus with what would now be regarded as a futile dose, and almost every early worker with the roentgen ray had occasional incomprehensible and cheering results of the same order.

At the present time, Wintz, quoting figures of his uterine and cervix cancer "cures," states that "in spite of the best technique, most favourable conditions and good general health of the patient, the results are from time to time inexplicable."

He states that from 15 to 20 per cent. of absolute failures occur even in the cases in which his past experience would lead him to expect a successful result. Observers are generally agreed that, as a class, the malignant growths of the cervix are those which are most likely to yield a fair proportion of satisfactory results. The reason for this probably lies in the fact that in postmortem examination it is found that 55 per cent. of these gynecologic cases show entire freedom from metastases, whereas breast cancer yields only 3.2 per cent. freedom from metastases in the postmortem records (Lazarus Barlow).

There are, however, evidently different types, histologically identical; at the one end of the scale, those easily influenced by radiations, at the other, those that are quite intractable; i. e., radiosensitive and radio-insensitive types. Since all living tissues can be killed by destructive doses of radiations, all growths are classed as radio-insensitive that have the same or a greater degree of radiotolerance than the surrounding normal structures.

The problem of malignancy as seen by the radiologist is full of contradictions, and it is clear that neither the clinical character nor the cell form of the constituents, although usually reliable, is the definite criterion as to the real nature of a tumor. For want of a better classification, we must, therefore, still give the same name to histologically identical growths, although some of them disappear under radiations while others persistently extend and recur, regardless of all the wiles of the radiologist. One cannot help feeling that there is some fundamental difference in the two, and that this difference is not expressed in the cells that are seen under the microscope. The one is a radiosensitive and the other a radio-insensitive tumor. As yet, the only means of determining the identity of each is by watching the effect of radiation treatment—an agency that may be applied in homeopathic, medicinal or such destructive doses that they "cure the disease and kill the patient."

MALIGNANT CAUSATIVE DISEASE

Certain cases are landmarks in every medical man's experience, and the following is the only one I shall mention in detail, for it is my purpose, as far as possible, to view things from such a distance that detail is lost. The first case was not labeled as one of the regular types of malignant disease, but out of it arose the train of thought that is embodied in this present paper.

In 1910, a healthy boy, aged 15, an only child, came with large masses of glands in the left groin and right side of the neck, and smaller masses elsewhere. The spleen also was slightly enlarged, and it was diagnosed as a case of acute lymphadenoma. No changes were found in the blood at any time, except slight secondary anemia. He was treated with the roentgen rays, and the glands disappeared. He went away to the hills, but was back in a fortnight, gasping for breath, and with large masses in the mediastinum. These also quickly disappeared, but the boy,

though apparently well again, was kept under observation and frequent treatment. Glands appeared from time to time in all the usual sites, but were always easily disposed of.

There was some swelling of the hands and feet, and these became exceedingly painful. Roentgenograms showed definite changes in the bones of one of the hands. Roentgen-ray treatment cured the pain and swelling completely, and he could dress himself and use ordinary boots. But gradually the boy lost strength, in spite of the fact that every gland disappeared under treatment almost as soon as it was detected. Hundreds of lymphoid nodules appeared in the skin of the back, and in other situations, some breaking down and forming ulcers about three-fourths inch in diameter, and these also yielded to the magic. When only a portable coil and accumulators were available, even the masses in deep situations yielded. Yet all the time the weakness and slight cachexia increased, and after fifteen months of the toughest medical fight I ever had, the boy died from exhaustion.

It was one of the most disheartening cases imaginable, for the faith of the parents and son was kept up the whole time by the obvious effects of the rays; and yet, to the onlooker, it was clear that it was only the glands and nodules, the symptoms, the accidental factors, that were influenced. There was evidently some underlying cause at work that we were not touching at all by our radiations. In this case, at any rate, it was perfectly clear that there was a definitely malignant disease at work, of which the lymphoid overgrowths were but a symptom. Without roentgen-ray treatments, the glands would have wrought death, accidental, as I term it, in a few weeks; but with treatment, the accidental death was averted, and we had the picture of the underlying malignant disease running its slow and certain course, unaffected in any way by the rays. The outstanding impression on my mind was the fact of an underlying malignant disease which was giving rise to enormous overgrowth of all lymphatic tissue, these overgrowths being practically malignant growths, although they did not tend to invade surrounding structures.

And then, on the other side of the picture are two very early private cases, clinically almost identical, so far as one could see, in which the diagnosis was retroperitoneal sarcoma originating in the suprarenals.

In one case, a boy, aged 9 months, no operation was performed. In the other, a girl, aged 15 months, the late Prof. G. A. Wright explored, found a typical sarcomatous mass that was friable and almost breaking down, and which he did not attempt to remove. Both these infants were irradiated with such apparatus as we had in those days—at the most, the tubes would not stand more than half a milliampere at perhaps a 3 to 4 inch spark gap. There were no filters except a layer of felt, and the skin was hardly bronzed. Yet both these children recovered completely, and are now normal healthy adults. What had wrought this change? I know not, but it was quite certain that these malignant growths were affected by something, presumably the rays, in spite of the fact that so little could have reached the required depth. And the impress of these two cases on my mind was that of a locally malignant growth, fortunately of an unusually radiosensitive type, in which the originating cause had disappeared.

From these isolated and rather unusual cases, therefore, I came to look at cancer cases in a different light. It occurred to me that perhaps a malignant growth might be originated by a malignant causative disease, and that these two elements might exist concurrently, or that the malignant causative disease, having started the malignant cell overgrowth, might die out, leaving the malignant growth to accomplish the death of the patient, but thwarted in the case of these two infants by the fact that the growth was particularly radiosensitive and that there were no untreated metastases.

TYPES OF DEATH FROM CANCER

There is one, and only one, certain proof of malignancy, i. e., the death of the patient, for neither the clinical nor the microscopic characters of the cells are infallible evidence of malignancy. If a patient recovers from what was clinically and microscopically a malignant growth, we write it down as either a miracle or that the diagnosis was wrong. One man put it that the radiologists' successes in cancer were the clinicians' failures in diagnosis; but this is far too sweeping and is not justified by experience, for these miracles are too frequent and too dramatic to be interpreted in this way. If the patient recovers, however, we can never say with certainty that he had been suffering from a malignant disease, for death is the one and only infallible proof that the process that we have been watching or treating is a malignant one. No clinical and no microscopic evidence is infallible. Microscopic cell forms and malignancy are not necessarily synonymous terms.

Death is the natural end-result, the one common factor; but the manner in which life is extinguished differs very widely and calls for more than passing consideration.

1. The first, and far the commonest, cause of death is that some vital organ is invaded by the direct extension of the primary growth or its metastases. This form of death is accidental and not an essential part of the malignant disease, for it is something approaching pure chance whether the growth attacks a vital part early or late. A very malignant type of growth in one part of the body may take a long time to kill the patient if situated in some less vital spot. One could, in fact, imagine a growth extending almost without limit, provided it maintained its blood supply, if it did not invade a vital organ.

2. Secondly, there is death from septic infection with its resulting absorption, its cachexia, debility and gradual wasting. This, again, is not an essential part of the malignant disease, although death supervenes. Within the body, this source of danger to life is still only too common, but, thanks to the roentgen ray, we see less and less of this type of death from external ulceration, with its festering and fetid ulcers.

3. The third and much more unusual type of death suggests that, as in my lymphadenoma case, there is another factor, one of which I have no proof but of which I am fully convinced. We see some devitalizing process at work and we usually attribute it to the effects of undiscovered secondary deposits; but, in many cases, I feel certain that it is largely the manifestation of an underlying malignant disease which unfailingly results in the gradual weakening of the patient, with cachexia and loss of energy and strength, and which ends inevitably in death from exhaustion. Whenever we see a cancer patient with cachexia, apart from septic absorption, we know that, no matter whether the mass responds or does not respond to radiations, the patient will steadily go down hill and die, and in the terminal stages the temperature will rise, quite apart from the presence of any sepsis. This, to my mind, is the manifestation of the working of the true malignant disease. Provided the patient lives long enough, this process is seen in varying degrees of intensity, but is always subject to the intervention of death from one of the intercurrent or "accidental" causes—invasion of the vital organs or sepsis. It is seldom, if ever, seen in rodent

ulcer, but its presence is often suggested in those forms of malignant disease of slow growth in which metastases are not attacking vital organs, and it gives one the impression that not only are the ordinary causes of death in these diseases (extension and sepsis) accidental, but many of these growths are only an incident or accident in an underlying malignant disease. In order to save repetition, I will call this hypothetic and entirely unknown quantity, this essential underlying malignant process, X, and I may as well say at once that I believe it will eventually be found in the blood, and that it may disappear after originating the growth and also that it may vary widely in intensity quite apart from the type of growth it evokes.

I believe that this X occurs in every case of true malignant growth, and yet, how can one explain the fact that certain cases are cured by surgery or by radiations, while others persist and spread, either directly or by metastases, in spite of all we can do? Think of a case of a rodent ulcer that fails to respond. The patient often remains in perfect health until sepsis or extensions slowly end the scene. It is a purely local disease, and there seems to be no X in the case at all. It is merely a locally malignant disease and one which, mercifully, is usually radiosensitive. It does not even tend to extend by metastases but only by direct spread. If X was ever present in the case, it has disappeared.

Now let us look at the type of breast growth in which all the conditions seem to be particularly favorable for operation, so far as the surgeon can tell. In some of these, a recurrence comes in or about the scar, which may respond perfectly to comparatively mild roentgen-ray treatment, and we see an apparent local cure. Unfortunately, however, there are only too often secondary deposits elsewhere that we cannot detect, and these are usually the "accidental" cause of death, and yet one feels practically certain that if these patients had been irradiated early enough, there would have been no metastases, and we should have obtained an apparent cure, as we actually do in a considerable number of such cases. Occasionally, one has the good fortune to treat a case of this type that is not complicated by operation. I see a woman from time to time who five years ago had a large and typical inoperable scirrhus with extensive glands in both the axilla and above the clavicle, and yet, today, the patient is in perfect health, and there is not a sign of any previous disease in the breast. In another case, the breast became almost normal under radiations in the period of waiting for a bed in the hospital. The obvious thing to say, of course, is that the diagnosis was wrong; but in a large number of what must have been similar cases, in which the surgeon states that he has been able to remove only a portion of the growth, the patients are alive and well to this day. The cases are far too numerous to be accounted for by throwing doubt on the diagnosis of the clinician and microscopist. I interpret these very encouraging results by thinking of them as of only local malignancy, apart from their metastatic spread. They happen to be radiosensitive, and we obtain an apparent cure; the cause, the X that originated the growth, has disappeared, and if the growth is completely eliminated by operation or by radiations or by a combination of the two, an actual cure is effected.

Then one thinks of other radiosensitive cases in which, although recurrences disappear under the rays, others come up, and often we are also successful in dealing with these as they occur—the cause, the X, is still at work, and sooner or later death comes, usually by internal deposits in vital organs and sometimes accompanied by the cachexia, etc., that is associated in my mind with X.

Among those cases that seem to offer every prospect of success and in which irradiation is done at the earliest possible moment after operation, there are some in which growths recur in or about the scar and which are quite uninfluenced by the rays; i. e., radio-insensitive. They spread by direct extension in spite of all we can do. Occasionally, a change in the type of radiation raises our hopes for a time, but nevertheless death comes, generally by metastasis. And yet, this absolutely uncontrollable radio-insensitive disease seems to differ in no outward or microscopic characteristic from the other type which is radiosensitive and which, apart from metastases, seems to promise such good results.

In many of these breast cases, however, in addition to the growth, there seems to be some other factor at work. The tumor itself may have the same clinical and microscopic appearance as those in which we have obtained apparent cure, and it may or may not respond locally to radiation; but, no matter what we do, there is the gradual wasting associated with cachexia which is, to my mind, evidence of the true underlying malignant disease X which, when once established, never seems to falter in its course, but unfailingly brings death, no matter what happens to the growths, the cell overgrowth that takes place in its presence. The patient gets weaker and weaker, develops a rise in temperature, and eventually dies from exhaustion, occasionally with so little of the cancerous growth itself that it looks very doubtful whether the tumor could have been the cause of death. In its course, it resembles a case of pernicious anemia, complicated by a growth.

In some of the breast cases, one can trace the same course of events as in the boy with lymphadenoma, but less accurately and in a much more complex picture that is distorted and obscured by the malignant tumor and its symptoms. Sometimes one gets a clear impression of the underlying cause at work if the growth happens to be radiosensitive, and we note the progressive weakness, which we usually ascribe to internal secondary deposits. I suggest, however, that, in part at least, it may be put down to the continued action of my hypothetic X.

SUSCEPTIBILITY OF CANCERS TO IRRADIATION

I have chosen to speak in terms of those types of cancer which are most common and most easily observed, but my general impression of growths in other situations is on the same lines; i. e., that there are two distinct types, clearly differentiated by the manner in which they do or do not respond to radiation. Some are much more susceptible than others in their reaction as well as by reason of their accessibility; but underlying, and at the back of all of these, there is a malignant causative disease, which may or may not persist after it has done the deadly work of initiating the growth.

In the radiosensitive type, we may hope for complete success if we can locate and eradicate the primary focus and its metastases, only if this underlying factor has disappeared; but if X is still at work, even in a very mild form, we shall not succeed in the end, for sooner or later, recurrences, even if they are of radiosensitive type, will come where we cannot detect them, and death follows.

In the radio-insensitive type, we can do nothing but watch the progress of the growth and its metastases. When X is not at work, one has seen these tumors pur-

suing their tragic course for a year or more, with comparatively little, if any, lowering of the patient's vitality, till nerves are involved, when pain and loss of sleep undermine the patient's strength. The end in such cases is often pathetic, and it is a merciful release when, at last, some vital organ is put out of action.

In those cases which I suggest are due to the persistence of the true malignant cause, X, the picture, if we can eliminate the obsessing factor of the growth itself and its symptoms from our minds, is one of increasing debility, of the type of pernicious anemia, and it is this disease which I would suggest as the simile of the underlying malignant disease. This fatal type of blood change is not associated with cell overgrowth, but we all know how frequently a case diagnosed as pernicious anemia turns out, in the end, to be "due" to an internal growth. I suggest that in these cases of mistaken diagnosis we may have been confusing cause and effect, and it is possible that some of the cases of so-called pernicious anemia are the uncomplicated action of my hypothetic X.

NATURE OF X

I suspect that this X is a blood condition, possibly a very delicate biochemical change that has a selective stimulating action on the growth of certain types of cell under favorable conditions, the type of cell affected depending on the nature of the biochemical change. Of the conditions we know nothing; but if one might indulge in pure speculation for a moment, one might accept X as a temporary or permanent blood condition, very slight changes determining whether its action should influence one or another of the different types of cell to cancerous growth. Suppose that at the time this slight blood indisposition occurred, there was irritation of, say, the breast cells, making them susceptible to the influence of X, it might stimulate these cells to disordered overgrowth, forming a malignant tumor that would normally run its fatal course, while the underlying malignant disease, the blood change, entirely disappeared. The patient is operated on and there is a "cure." One could imagine the same sequence of events occurring again after many years, and surely this is a more reasonable explanation than to think of malignant cells lying dormant for perhaps as long as twenty years.

Or we may suppose that the malignant disease in the blood gets a strong hold, and no matter what treatment the growths receive as they appear, the cause will still be at work, stimulating other groups of cells of the same type into activity, for the selective action of X is most definite. At the same time, each of these growths is capable of dissemination in the various well recognized ways, and before the malignant disease makes its presence known as a separate entity, the growth has completely filled the picture. Suppose, however, X does not find any injured cells on which to act, or maybe the blood change does not happen to be one that affects any particular type of cell until very late; then we get the picture of the cases that approximate to pernicious anemia.

This, of course, is all pure fantasy, and put down simply to give more concrete form to my rather nebulous ideas as to the nature of X.

It is, however, a most remarkable fact that a patient seldom suffers from two types of cell overgrowth at the same time. Scirrhus of the breast and similar types of growth elsewhere, colloid, columnar, squamous, round or spindle cell overgrowth, many are the types, but there is only one type as a rule in one patient.

In the boy who forms the subject of my text, the malignant disease disordered the reproduction of the lymphoid cells, first in one region, then in another, and later on, practically universally, but never any other type of cell. Because these happened to be radiosensitive, we could watch the almost undisturbed progress of the malignant disease itself. In breast cancers, it is only too common an occurrence to find the other breast affected, and, with a cellular formation, that is identical with the first growth.

Thanks to our teaching, we are so taken up with the idea that all secondary manifestations arise from the one primary growth, and that the cause of the growth is contained in the mass itself, that we do not think of the possibility of some outside cause that may stimulate similar cell elements in other parts of the body and that some of them may be entirely independent growths, originated by the same cause.

To my mind, the hypothesis I have suggested gives a much clearer idea of those unaccountable metastases that we could not explain on any reasonable grounds. We will all accept that a metastatic deposit may travel by the blood stream, and we must also accept that the lymph stream carries the trouble along its course in the direction of its flow. We must also accept the fact that a growth creeps, say, across the middle line from the breast, and we can trace the nodules in the course of spread by direct extension; and yet we see many cases of recurrence in the opposite breast, often in the outer upper quadrant with not a trace of intervening growth. It is not just an occasional happening; it is a thing we are always looking out for, and the only explanation that is given is that it is lymphatic extension, against the flow of the lymphatic stream. Such an explanation is against the laws of physics and experience, and I suggest that my hypothesis offers a much more reasonable explanation. The X that caused the original trouble is still present or has recurred, and it has affected another group of cells of the same class, stimulating them to malignant activity. In one such case that I saw, after writing this, I noted three things. The right breast had been removed, and there was (1) direct extension of small nodules in the skin across the middle line and elsewhere; (2) a large mass in the upper outer quadrant of the other breast with glands in the axilla, and (3) another curiously placed and much larger recurrence well below the scar. This last was puzzling till I thought of the possibility of a rudimentary breast in such a position. I believe that in this patient X was still at work, and in addition to the frequently noted stimulation of a growth in the other breast, it had affected the cells in a rudimentary breast in addition and these two centers of growth were not recurrences in the ordinary sense, but actually new primary growths set up by the same unknown factor that had initiated the original breast tumor.

Is it not reasonable to suggest that the cause which originated the primary growth may still be at work in these cases, and that it may set up a similar type of growth in other parts that contain the same cell formation?

I had intended to outline relevant observations on postoperative breast treatment, blood changes and manifestations in bone, but time will not permit. I can only state that there are observations that give credence to the theory I have put forward.

CAUSE OF CANCER

Does this theory help us in any way toward the elucidation of the great problem? I think that it does,

for it suggests very strongly that it is waste of time and energy to look for the cause of cancer by gazing down a microscope at the sections of a cell overgrowth, the end-result of a factor that may or may not have been present when the specimen was taken. That, perhaps, is a negative benefit. It does, however, indicate that if we are to find the cause, we must sift our cases and attempt to determine accurately in which of these X is still at work and find out in what way the blood differs from those in which the disease is only locally malignant; i. e., in which X is no longer present. It is among the living, not among the dead, that hope lies. Certain observations as to changes in bones make me confident that the cause of malignant cell overgrowth is a systemic one, and the obvious inference is that it will be found in the living blood. Until we know with certainty in which cases X persists, we must search every cancer case and particularly attempt to find a difference in the blood constituents between those that develop the ill omened cachexia, as compared with those in which the disease is only locally malignant, as shown by operation or radiation "cures."

I am quite satisfied that it is useless to look for the cause of malignant disease in the growth itself, and that the exciting cause will eventually be found elsewhere, either in the blood or carried by the blood, and that it will probably be found in some minute biochemical change which affects the reaction of the blood on certain types of cell, those cells being particularly susceptible that have suffered from some mechanical or inflammatory source of irritation, or which in the natural course are undergoing degenerative changes at the end of their life of functional activity.

SUMMARY

It is a usual custom to summarize a paper, and I am indebted to my partner Dr. Morison for the following, which he handed to me after reading an early manuscript:

Let X be the underlying cause of cancer.
Let G be a tumor that is radiosensitive.
Let D be the death of the patient.
Let L be the life of the patient.
Let O be the operation.
Let R be the radiation treatment.

Then
$$G+X=D$$
$$G-X=D$$
$$\left.\begin{matrix}G+X+R\\G+X+O\end{matrix}\right\}=D$$
$$G-X+O=\frac{L}{2}$$
$$G-X+O+R=L$$

Therefore, the only cases in which we can hope for cure are those in which we have a radiosensitive growth, an absense of the underlying cause and complete extirpation, either by operation or by radiation or by a combination of the two. But if a growth is radioinsensitive, the chances of life are not increased by radiation and in fact are diminished if radiations are carried to the extent of interfering with the natural resistance of the tissues.

ABSTRACT OF DISCUSSION

DR. B. H. ORNDOFF, Chicago: Dr. Barclay has called attention to most of the important phases in which medical men of today are striving for the control of this disease. One point in his paper seems to be the crux of contention among the workers in both clinical and experimental research, and that is what he refers to as the X, or the essential underlying malignant process. Dr. Barclay referred to the X as "hypothetic" and an "entirely unknown quantity." Recent research in physics and the work of Maud Slye of Chicago, on the heredity of cancer in mice, seem to throw light into this most obscure phase of the subject. I believe that Dr. Slye has proved the heredity of cancer in mice, and that heredity and the biologic reaction in mice are manifested in the same manner in man. The electrical constitution of matter is better understood in the light of recent research, and now we have results from the investigations of the electrical resistance of different tissues, electric conductivity, ionization effects, and many other physical phenomena in normal and abnormal tissues, on which conclusions of important characters are being drawn. The study of the tissue reaction to irradiation must involve a consideration of tissue reaction to ionization, and this, in turn, requires a knowledge of the electrical constitution of the atoms composing these tissues. That the principal physical reaction in irradiated tissues is a disturbance in the existing interatomic relations seems very probable. Further, it seems reasonable to believe that variation of the interatomic relations constitutes one of the conditions of age, nutrition, functional capacity, etc., of living tissue albumins and may go far to explain many important biologic conditions connected with this problem, both from the diagnostic and the therapeutic standpoint. An apparatus has been constructed for the purpose of attempting to alter the interatomic relation in tissues, and I hope in the very near future to be able to report the results of some clinical research. It seems quite possible that the cachexia, the toxicosis of mysterious origin, the intrinsic malignant disease, the X of Barclay, may be elucidated eventually through further studies on heredity and interatomic relations in tissues.

THE ULTRAVIOLET RAY AS A PROPHYLACTIC AGAINST RADIODERMATITIS *

GEORGE M. MacKEE, M.D.
AND
GEORGE C. ANDREWS, M.D.
NEW YORK

Many years ago, John Remer and the senior writer noticed that acute sunburn appeared to enhance the effect of roentgen-ray and radium radiation on human skin. It was also remarked that tanning of the skin, resulting from repeated exposures to the sun, did not materially increase the toleration for roentgen-ray irradiation. With these impressions in mind, it was with no little surprise that we read one article after another in which it was averred that actinotherapy is capable of greatly increasing skin toleration for roentgen-ray irradiation; and that the ultraviolet ray possesses the power of mitigating and even preventing the deplorable results of excessive roentgen-ray and radium dosage.

In 1915, Becker [1] reported that he had substantially increased skin toleration for the roentgen ray by tanning the skin with the ultraviolet ray before subjecting the patient to roentgen-ray treatment; and there have been several subsequent assertions of a similar nature by foreign authors. On the other hand, Reyen of Copenhagen, in a personal interview, was of the opinion that actinotherapy does not decrease "radiosensitiveness"; that acute ultraviolet ray reactions tend to increase the affect of roengenization, but that actinotherapy is of value in the treatment of chronic roentgen-ray ulcers.

In this country, Sampson's article,[2] published in 1922, evoked a great deal of interest and comment, most of which is unpublished. It will suffice to give the gist of

* From the Department of Dermatology and Syphilology, Columbia University College of Physicians and Surgeons.
* Read before the Section on Dermatology and Syphilology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Becker, P. F.: Fortschr. a. d. Geb. d. Röntgenstrahlen **14**: 175, 1909; Strahlentherapie **6**: 405, 1915.
2. Sampson, C. M.: Am. J. Roentgenol. **9**: 570 (Sept.) 1922.

Sampson's report. The part to be subjected to intensive roentgen-ray irradiation is first exposed to intermittent ultraviolet irradiation over a period of four weeks. The treatments are of a strength sufficient to evoke erythema or vesiculation. The exposures are repeated as soon as the reaction caused by a previous treatment subsides. Whether or not tanning results is immaterial. During the entire month, the patient also receives generalized actinotherapy with erythema doses. These treatments are administered several times weekly. Beginning the same day, but subsequent to the hyperintensive roentgen-ray irradiation, erythema or blistering doses of the ultraviolet ray are applied to the roentgenized area daily or every second day for about a week. Both water-cooled and air-cooled lamps are employed. As a result of this procedure, Sampson finds that it is possible to give approximately five times the erythema dose of heavily filtered roentgen rays (8 mm. of aluminum) without effecting erythema or epilation. He emphasizes the necessity of vigorous actinotherapy subsequent to the roentgen-ray treatment. He considers that this is of as much importance as the antecedent treatment, if not more.

Pacini [3] approached the subject rather cautiously, and his conclusions are not particularly definite. He appears to believe that roentgen-ray erythema and superficial roentgen-ray injuries may be prevented to some extent by actinotherapy; that skin toleration for roentgen-ray irradiation is perhaps amplified, but that this prophylactic influence does not extend to a depth of more than 75 or 100 microns, which is only about 0.1 mm. In this connection, Hasselbach [4] finds that approximately 60 per cent. of the longest or most penetrating ultraviolet rays are absorbed by 0.1 mm. of epithelial tissue. As absorption for any given wave length is approximately exponential, the direct effect of ultraviolet irradiation on roentgen-ray and radium injuries at a depth greater than a few fractions of a millimeter must be negligible. That generalized actinotherapy can modify metabolism, alter blood chemistry, give rise to certain vitamins, change the blood count, influence general resistance, perhaps affect the endocrines, produce pigment, influence skin chemistry, ferments, etc., appears to be the consensus of opinion, but there is as yet no proof that any of these attributes of ultraviolet rays modify the local biologic action of roentgen rays or radium rays to any great extent. To finish with Pacini's report, after this short digression, attention should be directed to the fact that he tested the prophylactic affect of preliminary actinotherapy by tanning a number of areas of skin and exposing these areas and an equal number of untanned adjacent areas to an erythema dose of the roentgen ray. In every instance, the erythema was the same in all areas.

In 1924, Rulison [5] inadvertently administered several times the standard erythema dose of unfiltered roentgen rays to a very small area of skin on the face of a man, aged 63. This was followed by very vigorous treatment with the Kromayer lamp every day or two for about two weeks. The roentgen-ray reaction did not exceed that of the first degree, whereas, without the subsequent actinotherapy, Rulison is convinced that there would have been a very serious injury.

A few months later, Swanberg,[6] in a commentary on Rulison's report, called attention to the fact that nine and even a larger number of erythema doses of the unfiltered roentgen ray may be administered at one sitting to small areas of skin, in some instances and under suitable conditions, without effecting more than a second degree reaction, and that such reactions heal spontaneously in a few weeks. He quotes Grier,[7] who has had a similar experience. Rulison, by arithmetical computation, estimated his dose as 4⅓ skin units, a skin unit being the usually accepted standard erythema dose. Swanberg also employed the same method of estimation in order to compare his results with those of Rulison's. Arithmetical computation, as generally employed, is not of proved accuracy and it has not been approved by physicists. It has been customary to figure that intensity varies as the voltage, but there is reason to believe that it varies as the square of the voltage. There are other objections to the arithmetical method which need not be discussed at present. We simply desire to call attention to the fact that at the present moment the arithmetical method of computation is not sufficiently accurate for experimental purposes unless suitably controlled. John E. Lane,[8] who recognized the danger of accepting Sampson's hypothesis, warned his colleagues not to depend on the supposed prophylactic action of actinotherapy in the absence of irrefutable proof.

In a recent publication, Traub [9] advises the combined use of ultraviolet rays and roentgen rays for the treatment of acne vulgaris. He believes that the former, in addition to being a good treatment for acne, will permit larger doses of roentgen rays, will help to prevent radiodermatitis, and also tend to prevent such sequelae as atrophy and telangiectasia.

Foveau de Courmelles,[10] and Mathieu and Pech,[11] have reported what they believe to be increased sensitization to roentgen rays produced by antecedent and simultaneous actinotherapy. Foveau de Courmelles is of the opinion that one type of irradiation may lessen toleration for the same kind or for a different kind of irradiation. As he is a disciple of anaphylaxis and allergy, he thinks that it may be possible to sensitize or desensitize a patient, an attractive but not very practical concept that is in line with the physiologic complement idea of Sampson. Somewhat irrelevant to this article but in relation with the idea just expressed, Auer and Witherbee [12] state that they have raised the resistance of the skin of rabbits to roentgen rays by the injection of horse serum. However, none of these allergy experiments have been corroborated.

It might be well to state here that the resistance of certain normal and pathologic cells to roentgen rays may be increased by previous roentgenization, although just how this is accomplished is not well understood. Russ, Chambers and Scott,[13] Ewing,[14] Fleisher, White and Loeb,[15] Murphy and his collaborators,[16] and others have recorded carefully conducted experiments in this line, particularly in relation to the lymphocyte and the cancer cell. Many roentgenologists have called atten-

3. Pacini, A. J.: J. Radiol. **4**: 410, 1923.
4. Hasselbach, K. A.: Biochem. Ztschr. **19**: 435, 1909, quoted by Lane, C. G.: Newer Physiology of Skin, Arch. Dermat. & Syph. **9**: 176 (Feb.) 1924.
5. Rulison, R. H.: J. A. M. A. **83**: 1505 (Nov. 8) 1924.
6. Swanberg, Harold: Prophylaxis of Roentgen-Ray Overdosage, J. A. M. A. **83**: 1704 (Nov. 22) 1924.
7. Grier, G. W.: J. Radiol. **2**: 39 (Nov.) 1921, quoted by Swanberg (Footnote 6).
8. Lane, J. E., in discussion on Lane, C. G.: Newer Physiology of the Skin, Arch. Dermat. & Syph. **9**: 176 (Feb.) 1924.
9. Traub, E. F.: New York M. J. & Rec. **90**: 122 (July 15) 1925.
10. De Courmelles, Foveau: Paris méd. **12**: 292 (Sept. 30) 1922; Gaz. d. hôp. **95**: 954, 1922.
11. Mathieu, P., and Pech, J. E.: Rev. méd. de l'est **49**: 257, 1921.
12. Auer, John; and Witherbee, W. D.: Reactions of Normal Skin to Destructive Doses of Roentgen Ray, J. A. M. A. **76**: 301 (Jan. 9) 1921.
13. Russ, S.; Chambers, H., and Scott, G.: J. Path. & Bacteriol. **23**: 477 (Dec.) 1920.
14. Ewing, James: Radium in Cancer, J. A. M. A. **68**: 1238 (April 28) 1917.
15. Fleisher, White and Loeb.: Centralbl. f. Backteriol., Part 1 **63**: 450, 1912.
16. Murphy, J. B.: Heteroplastic Tissue Grafting Effected Through Roentgen-Ray Lymphoid Destruction, J. A. M. A. **62**: 1459 (May 9) 1914; J. Exper. Med. **20**: 397, 1924; **22**: 204, 800, 1915; **24**: 419, 1916.

tion to the fact that a number of diseases may be favorably influenced at first by roentgenization, but after such treatment the disease may cease to react favorably to irradiation. Such diseases are epithelioma, psoriasis, mycosis fungoides, leukemia and Hodgkin's disease. On the other hand, such diseases as acne vulgaris may be made much worse by the first few weeks of fractional roentgen-ray treatment, while a continuation of such treatment will result in a cure. It is not germane to this article to speculate as to the cause or significance of these phenomena. Suffice it to say that there is, as yet, no satisfactory evidence to support the belief that the normal human skin will tolerate substantially larger quantities of roentgen rays without permanent injury because of previous roentgen-ray irradiation. In fact, the clinical evidence is mostly to the contrary. Even though it may be demonstrated that a given cell may develop a certain type of acquired resistance to irradiation, such a fact should not be interpreted as indicating that greater amounts of roentgen-ray irradiation may be administered without injury to local tissue or to the organism.

A perusal of the literature dealing with the prophylactic action of the ultraviolet ray encourages the opinion that conclusions may have been formulated and developed, ideas evolved, concepts constructed as a result of haste, faulty premises, inaccurate judgment and technic, and erroneous interpretations. It would seem as though the known biologic effects of various quantities of roentgen-ray irradiation of different qualities have received inadequate attention. The same may be said of the influence of age, sex, complexion, location, disease, thickness of epidermis or derma, idiosyncrasy, dimension of treated area, etc. In many instances, too, the experimental work was not carefully controlled.

Most of the foregoing possible sources of error are well known. It is not so generally recognized that an erythema dose of the roentgen rays, especially filtered rays, may be applied to one area of skin and double the dose administered to a contiguous area of the same size with very little difference between the visible reactions of the two areas. In some instances, it is possible to apply four or five times the standard erythema dose without provoking more than a moderately intense visible reaction. This may be due to age, the thick, horny layer of the skin, the small size of the area treated, and similar conditions. It should be borne in mind constantly that a visible reaction does not indicate the intensity or depth of biologic alteration. While a double or triple erythema dose may not evoke a visible reaction that is much greater than a single erythema dose, one cannot doubt that the biologic reaction is correspondingly greater. Furthermore, the various possible degrees of visible reaction with variations in half tones, edema or erosion are not well standardized. One observer will designate a given reaction as mild, while to another observer the same reaction might be considered moderate or intense. It should be obvious that visible reactions are not very accurate guides in experimental work and that they must be carefully interpreted.

The possibility of technical errors is considerable. The variation in output from different Coolidge tubes may be as high as 80 per cent. It is probable that this tube difference combined with errors of voltage, current and distance may result in a total error of between 100 and 200 per cent., as estimated by ionization, even when the operator is an expert and the apparatus of modern type. The point we desire to emphasize is that, while modern roentgen-ray technic is sufficiently accurate for diagnostic and therapeutic purposes, it is by no means absolutely precise, and one reason that this excellent therapeutic and diagnostic agent may be used with safety is that animal tissue apparently tolerates a large error of dosage. In other words, there appears to be a wide margin of safety. In this connection, we [17] have demonstrated that an experimental error of 100 per cent. may be detected only with difficulty by skin effects.

When one considers all the foregoing possibilities, it is obvious that conclusions must be very cautiously constructed, especially when the experimental work is done by other than pure scientists.

The subjoined simple clinical study was made in an attempt to ascertain whether or not the ultraviolet ray is of any real value as a prophylactic against radiodermatitis. It was not our aim to determine slight alterations in "radiosensitiveness" resulting from direct or indirect ultraviolet irradiation. Routine practical technic was employed, and the visual results were recorded. While such a procedure would not satisfy the physicist or the biologist, it provides useful information for practical roentgenologists and dermatologists.

The roentgen-ray apparatus consists of a 10 kilowatt direct current interrupterless transformer equipped with a rotary converter, sharp-pointed spark gap, rheostat control, kilovoltmeter and two milliampere meters. The same medium focus Coolidge tube was used for each treatment. The filament current was obtained from a separate rotary and was controlled by a very sensitive choke coil. The needles of the meters remained stationary throughout the exposure. The factors are given with each observation.

OBSERVATION 1.—*Treatment.*—Parental consent to use routine roentgen-ray treatment, combined with ultraviolet irradiation, was obtained for ten children affected with disseminated tinea capitis. The scalps of two of the children received repeated erythema and blistering doses of the ultraviolet ray for two weeks prior to the roentgen-ray treatment, at which time the scalps were well tanned. The scalps of the two patients were given also large doses of the ultraviolet ray every three days for two weeks subsequent to the roentgen-ray treatment. The other eight children received one blistering dose of the ultraviolet ray on the scalp immediately following the application of roentgen rays. Before any treatment was given, the scalp hair was cut very short. Both the Kromayer and alpine lamps were used.

The roentgen-ray treatment consisted of the routine unfiltered epilating dose for scalp hair administered in accordance with the five-exposure Kienböck-Adamson method. The factors were: 2 milliamperes; spark gap, 6 inches; distance, 8 inches; time, three minutes (1 skin unit). This constitutes the minimum unfiltered epilating dose for scalp hair of children between the ages of 4 and 10.

In each instance, the hair fell out about as usual during the third week. If anything, the defluvium began a little sooner and was a little more complete than is customary. These patients remained under observation for many months. The hair regrew in a normal manner and the disease was cured.

Comment.—Repeated intensive applications of ultraviolet rays administered to the scalp both before and after a minimum epilating dose of roentgen rays, do not materially enhance or retard the depilatory value of the latter.

OBSERVATION 2.—*Treatment.*—Three small areas of the same size and about an inch apart, were selected on the inner surface of the thigh of a blonde girl, aged 16. The patient was about to begin a course of fractional roentgen-ray treatments for acne vulgaris of the face and back. In all such cases, we now advise toleration tests on the forearm or thigh before applying the irradiation to the face. The patient consented to

17. MacKee, G. M., and Andrews, G. C.: Am. J. Roentgenol. **11**: 525 (June) 1924; **12**: 58 (July) 1924.

the toleration tests combined with the ultraviolet ray. Area A was given an erythema dose of the ultraviolet ray from a Kromayer lamp at a distance of 3 inches for three minutes. Area B received an identical exposure plus an erythema dose of unfiltered roentgen rays (3 milliamperes; spark gap, 6 inches; distance, 8 inches; time, 2 minutes 30 seconds; dose, 1¼ skin units). Area C received an identical dose of roentgen rays, but no ultraviolet rays. Area A depicted a vivid erythema thirty-six hours after the treatment, which persisted for five days, and then subsided rapidly with slight desquamation and no tanning. Area B developed a marked erythema, which persisted for seven weeks and was followed by deep pigmentation, which endured for six months. Area C developed a faint erythema eight days after exposure, which disappeared in ten days, leaving slight pigmentation, which lasted about two weeks.

Comment.—In this instance, a single erythema dose of the ultraviolet ray, administered almost simultaneously with an erythema application of the roentgen ray, distinctly enhanced the effect of the latter.

OBSERVATION 3.—*Treatment.*—A woman, aged 66, consulted us because of senile skin with numerous keratoses and epitheliomas; also severe pruritus vulvae. She gladly consented to toleration tests in combination with the ultraviolet ray, in preparation for the roentgen-ray treatment of her epitheliomas and pruritus vulvae.

Dec. 10, 1924, and about every four days thereafter for eight weeks, the patient was given generalized alpine lamp treatment. In all, thirteen treatments were administered. At each sitting, the anterior and posterior surfaces of the entire body were divided into three large areas. Each area received an exposure at a distance of 10 inches, increasing in time from thirty seconds to three minutes. A circular area of skin, 3 inches in diameter, on the left buttock, was exposed about every four days during the eight weeks to the radiation from a Kromayer lamp, in addition to the alpine lamp treatment. The Kromayer lamp treatments were administered under firm pressure. The time was gradually increased from one minute to eight minutes with a full current. Both the alpine and the Kromayer lamp exposures produced erythema and exfoliation, and at times edema, vesiculation, exudation and crusting, and resulted in tanning of the entire body, the tanning being most pronounced in the small area on the left buttock.

Feb. 5, 1925, 4 skin units of the unfiltered roentgen ray was administered to each of two areas of the skin 1 inch square. One area occupied the center of the area on the left buttock that had been exposed to the Kromayer lamp; the other area was symmetrically situated on the right buttock; both areas had received alpine treatment. The factors used were: 3 milliamperes; spark gap, 6 inches; distance, 8 inches; time, 8 minutes. The last Kromayer lamp treatment was administered two weeks previous to the roentgen-ray exposures.

One week after the roentgen-ray treatment, erythema was noted in each area. It is not known which appeared first. February 19, the erythema of the left buttock was the more intense of the two. February 26, three weeks after the roentgen-ray treatment, the erythema of the left buttock was about three times more intense than that of the right buttock.

March 5, there was edema and intense erythema in each area, with vesiculation and crusting in the area on the left buttock. The clinical appearance was about the same on the 19th.

March 28, almost two months after exposure to roentgen rays, erythema was much more intense on the left buttock than on the right side. The edema, exudation and crusting had disappeared. The erythema disappeared from both areas about a month later. The pruritus vulvae was cured, as were the epitheliomas and keratoses.

Comment.—Antecedent vigorous actinotherapy perceptibly decreased toleration for roentgen rays. The observation also demonstrates that four times the standard erythema dose of the unfiltered roentgen ray may be administered to aged skin without effecting more than a mild reaction.

OBSERVATION 4.—*Treatment.*—A man, aged 39, of moderately dark complexion, had leprosy.

Feb. 3, 1924, an area of skin 1 inch square, on the left cheek, was exposed to unfiltered roentgen rays, the following factors being employed: 5 milliamperes; spark gap, 8 inches; distance, 10 inches; time, 3 minutes 54 seconds. In the center of the area there was a small leprous nodule.

February 16, thirteen days after the treatment, there was moderate erythema which had almost disappeared by March 12. March 19, one month after exposure, there was no erythema.

This patient did not receive ultraviolet-ray treatment. The leprous nodule disappeared.

Comment.—The same factors were used in this observation as published by Rulison, and the location was about the same. Our patient, however, was younger. The observation supports the contention of Grier that actinotherapy did not prevent a severe roentgen-ray reaction in Rulison's patient.

OBSERVATION 5.—*Treatment.*—A man, aged 67, presented an indurated, prickle-cell epithelioma which occupied the left half of the lower lip, an inoperable case.

Oct. 18, 1924, the lesion and a portion of the surrounding normal skin were given an exposure with unfiltered roentgen rays consisting of 3 skin units (3 milliamperes; spark gap, 6 inches; distance, 8 inches; time, six minutes). This was followed by intense erythema which disappeared in about two months.

Seven weeks later, Feb. 3, 1925, the same area was given an exposure with unfiltered roentgen rays, Rulison's factors being used: 5 milliamperes; spark gap, 8 inches; distance, 10 inches; time, three minutes, fifty-four seconds. Twelve days later, there was a slight erythema which endured only five days. There was complete epilation, but the hair returned. Actinotherapy was not used. The epithelioma was markedly improved.

Comment.—This observation supports the results of Observation 4.

OBSERVATION 6.—*Treatment.*—A man, aged 58, presented numerous seborrheic keratoses scattered over the face, and a small basal-cell epithelioma on each cheek. The treatments included a small area of normal skin on each cheek in the center of which was an epithelioma. The roentgen-ray dose for each cheek was the same as that published by Rulison. The left cheek received roentgen rays only. The right cheek was given vigorous alpine lamp treatments at frequent intervals for two weeks prior and subsequent to the application of roentgen rays. Defluvium occurred in each area on the eighth day. The visible roentgen-ray reaction of the right cheek was somewhat more intense than that of the left cheek. The latter consisted of erythema and slight edema, which disappeared in about three weeks. The erythema of the right cheek disappeared in about six weeks. At the end of seven weeks, both areas showed pigmentation that was rapidly fading. There was a thin crust in the center of the area on the right cheek. At the time of the last inspection, there was no evidence of epithelioma.

Comment.—Vigorous ultraviolet irradiation, applied locally both before and after an intensive dose of roentgen rays, enhanced the action of the latter as compared with a control. This observation supports Observations 4 and 5.

OBSERVATION 7.—*Treatment.*—In the patient used for Observation No. 4, two small areas were selected, each of which contained a leprous nodule. One area was on the left cheek; the other on the right buttock. March 19 each area was given 4 skin units of the unfiltered roentgen ray: 3 milliamperes; spark gap, 6 inches; distance, 8 inches; time, eight minutes. Immediately subsequent to the roentgen-ray treatment, an area on the right buttock, 3 inches square, in the center of which was the roentgenized area, was given a blistering dose of the ultraviolet ray from the Kromayer lamp. The quartz front of the lamp was pressed firmly against the skin for ten minutes with full current. No ultraviolet irradiation was applied to the face.

March 28, nine days later, there was a moderately severe erythema of the face area, but no edema. The large oval area on the buttock, which had been treated with the ultraviolet ray, depicted intense erythema with crusting and exfoliation. In the center of this area, there was a scarlet red, swollen, crusted square where the roentgen rays had been applied.

April 8, the area on the cheek exhibited intense erythema with some edema. With the exception of pigmentation, the ultraviolet ray reaction on the buttock had disappeared. The roengenized square, in this location, depicted intense erythema, edema, exudation and crusting, with a split-pea sized central ulcer.

April 16, about one month after the treatment, the edema and most of the erythema had disappeared from the cheek. There was a little exfoliation in the center. The roentgenized buttock area consisted of a superficial discharging ulcer with a necrotic base and hyperemic margin.

April 23, the face area depicted pigmentation but no erythema. The ulcer on the buttock had healed. Erythema was still present, but this soon disappeared. The leprous nodules were cured.

Comment.—In this instance, erythema and edema resulted from four skin units of the unfiltered roentgen ray applied to a small area on the face. The same dose applied to the buttock area, plus a blistering dose of the ultraviolet ray, effected a more severe roentgen-ray reaction. It is the consensus of opinion that the face is more "radio-sensitive" than the buttock. This observation supports previous observations. It demonstrates that four times the standard erythema dose of roentgen rays may result in no more than a first degree reaction, and that an acute ultraviolet ray reaction may enhance the effect of roentgen rays.

CHRONIC ULCERS AND SEQUELAE

Practically all authors agree that actinotherapy is of value in the treatment of chronic ulcers caused by roentgen rays and radium and also for the treatment of telangiectasia. Hazen,[18] Pacini, MacKee,[19] Reyen and others have obtained good results with such treatment in cases of telangiectasia. While we have found actinotherapy (Kromayer lamp) of distinct value, especially when the area of telangiectasia is small, the results are by no means all that might be desired. Repeated blistering doses over a long period of time are often necessary, and the patients find such treatments very annoying, particularly when the affected surface is extensive, or if the face is involved. Failures are common, especially when there is much atrophy or hyperkeratosis. In the case of one patient, a single blistering dose of ultraviolet rays, applied under pressure with the Kromayer lamp to an area of telangiectasia on the neck, resulted in areas of atrophy, depigmentation and dehematization. Between these areas, telangiectasia still persisted. The cosmetic or esthetic appearance was worse after than before the ultraviolet ray treatment. Another case of profuse telangiectasia of the back was treated with repeated blistering Kromayer lamp exposures under pressure. This resulted in distinct atrophy in addition to depigmentation in round areas where the lamp was used.

While small doses of the ultraviolet ray seem useful in the treatment of chronic roentgen-ray and radium ulcers, it is possible that too much has been taken for granted. Ulcers of this type, after persisting for many months, may heal spontaneously and with considerable rapidity. Whatever treatment is being given at the time is likely to receive undeserved credit. However, we have encountered cases in which healing seemed to be the direct result of actiontherapy; therefore, it is our impression that such treatment is of value for this purpose.

CONCLUSIONS

1. Actinotherapy is of some value in the treatment of chronic ulcers and telangiectasia caused by roentgen rays or radium.

2. Vigorous actinotherapy, resulting in acute reactions, at or near the time of roentgenization, may enhance the result of the latter.

3. Tanning of the skin by actinotherapy does not materially increase toleration for roentgen rays or radium.

4. Preliminary, generalized actinotherapy, even when continued for a long time, does not appear materially to decrease "radiosensitiveness."

5. It is possible to administer several or many times the standard erythema dose of roentgen rays to normal human skin without effecting more than a mild visible reaction. Ignorance of this fact may account for the erroneous assumption that actinotherapy is a prophylactic against roentgen-ray and radium injuries.

6. It is our opinion that the ultraviolet ray, regardless of how employed, is of no practical value as a prophylactic against acute or chronic radiodermatitis.

7. It is our opinion that a combination of the ultraviolet ray and the roentgen ray is more likely to be followed by sequelae such as telangiectasia than when the roentgen ray alone is employed.

170 West Fifty-Ninth Street.

18. Hazen, H. H.: Am. J. Roentgenol. 9: 101 (Feb.) 1922.
19. MacKee, G. M.: X-Rays and Radium in the Treatment of Diseases of the Skin, Philadelphia, Lea and Febiger, 1921, p. 325.

ABSTRACT OF DISCUSSION

DR. HOWARD FOX, New York: Many of us were astonished at the assertions of Sampson that the effects of the roentgen ray could be neutralized by ultraviolet irradiation. Such a condition of affairs would have been very comforting in cases in which an overdose of roentgen ray had been inadvertently given by omission to use a filter, etc. In administering the roentgen ray in quantities approaching an erythema dose, we had been accustomed to avoid all extraneous sources of irritation, including ultraviolet irradiation. On this particular point, MacKee had always laid stress. This paper would seem to show that the contentions of Sampson are incorrect. We should continue as before to be as conservative as possible in the use of the roentgen ray, avoiding particularly overdosage, which may be followed by telangiectasis or other ill effects.

DR. FRED WISE, New York: There is no doubt about the great importance of this subject to all those who use the roentgen ray, and more work in this field should be carried out by as many men as possible. The experiments of MacKee and Andrews are definite, but as we occasionally hear unpublished reports of supposedly beneficial results from the use of ultraviolet light following excessive roentgen-ray exposure, there may be many features of the subject we have not yet ascertained. The thing to do is to repeat MacKee and Andrews' experiments and see what else we can learn. The question arises as to whether the pigment deposit following ultraviolet rays has anything to do with the claims which Sampson makes. I do not think it has much to do with it in the way of inhibiting the effect of roentgen rays, for urticaria pigmentosa and the pigmented sarcoma of Kaposi often respond very well to roentgenotherapy. I think the tanning and pigmentation of the skin have very little to do with it. One thing that should be emphasized is the process of depilation. It seems to me that if a patient with tinea capitis receives a depilating dose of roentgen rays preceded or followed by ultraviolet light, with the usual resulting defluvium within from seventeen to twenty days, then the inhibitory effect of the ultraviolet light must be discounted. The action of the roentgen ray on the hair follicle provides one of the standards of measurement. If the hair falls out seventeen days later, as it does, in spite of superimposed ultraviolet light exposures, the assumption that the latter inhibit the biologic effects of roentgen rays must be at fault. Another important point brought out by the speakers is in respect to secondary radiations. An area of skin about one-fourth inch in diameter may be exposed to four skin units of roentgen rays at one sitting, without provoking a second degree radiodermatitis. If one experiments with small areas,

using ultraviolet rays in connection with roentgen rays on such small portions of integument, the apparent inhibitory effect of the ultraviolet rays is apt to result in erroneous interpretations. The reason for this is that secondary radiations from roentgen rays are reduced to a minimum in such small areas of exposed skin; if larger areas are exposed, the effects of secondary radiations manifest themselves in the form of varying degrees of radiodermatitis as a result of excessive dosage.

Dr. Jeffrey C. Michael, Houston, Texas: Some experiments of my own corroborate the conclusions reached by the speakers. Two children with tinea capitis were given the usual one skin unit epilating dose, using the Kienböck-Adamson method of measurement. One child received ultraviolet light to two areas surrounding the anterior and occipital points before the roentgen-ray treatment; the other received the ultraviolet light subsequent to the roentgen ray. Sampson's directions for the employment of ultraviolet light were followed carefully. In these two cases, there was no difference in the fall or return of hair in the areas receiving ultraviolet light plus roentgen ray and those areas treated with roentgen ray alone. In addition, an experiment in which an acute radiodermatitis was produced was performed. It happened that a child living in an institution had a peculiar nevus of the scalp which for certain reasons it was thought best to remove surgically. This gave an opportunity to use an unusually large dose of roentgen ray. A small circular area in the normal scalp was first given one skin unit, and the diaphragm in the lead shield was enlarged and a larger area, inclusive of the previously irradiated one, was given an additional skin unit, both doses being unfiltered. Ultraviolet light was then applied at intervals, Sampson's instructions being followed. Epilation resulted in the entire area; hair returned in the outer zone, but none in the smaller central one for the five months that I was able to keep the child under observation.

TEETH AND EYE RELATIONS

SOME FINDINGS CORRELATED *

WILL WALTER, M.D.
EVANSTON, ILL.

GENERAL SURVEY

This paper may be regarded as a preliminary report on a research. It is not an accepted part of ophthalmology to follow leads into other fields, but it is a most interesting and valuable byplay for the investigator. It makes the practice in any field pleasurable. Research into primary causation is always worth while and can cover many avenues. This particular one, namely, the orientation of foci in teeth by other than dental means, has occupied me more than three years. It is not possible to evaluate what, if anything, has been accomplished; but this citation will perhaps help by broadening the outlook and by stimulating effort by others. I am still working on this phase of the subject and on measures of prevention, both specific and nonspecific, hoping to minimize the development and dangers of these foci.

During my thirty-three years of effort in ophthalmology and rhinolaryngology, it has happened, as is the experience of every worker in every department of the art of healing, that many disorders of unknown etiology are encountered. In the combined field, it happens that the nose and throat occupy more the position of portals of entry for disease, while the eye manifestations, particularly the intra-ocular structures, are dominantly blood borne and thus secondary. I have encountered, therefore, almost daily problems of cause and effect.

We have in the eye nearly all types of tissue, including brain cortex, since the retina is made up of cortical cells connected with the deeper structures by the finest of fibrils through optic nerve and tract; structures that resemble other brain tracts. The nuclei of these fibers lie in the retina; hence degeneration follows their destruction. We have voluntary and involuntary muscle structure, medullated and nonmedullated nerves, large vascular systems and the finest of capillary networks. We have, in the supporting structures of the globe, something akin to a joint—anatomically—a ball and socket joint of extraordinary degrees of mobility. We have, in the transparent lens system of the eye, modifications and differentiations of epithelial and connective tissue of the highest degree.

And we have all of these, including the circulating blood, under our eye. Thus we see on the eye side the effects of invasion from the nose, throat and oral side.

Parenthetically, I want to make a plea for a better understanding of the field of endeavor of stomatologists by our medical confrères.

Of late years, stomatologists have been taken to task for their medical shortcomings; but it would seem that our profession is far more to be reprehended for its dental shortcomings—for its meager knowledge and experience in diagnosing disease of the tooth and jaw, which should be its job. So far, the profession has for some reason looked on "teeth" [1] diagnosis as something apart.

THE LITERATURE

In my literary research, it has been interesting to note the trend during the years since Hunter revived the relationship of teeth to systemic disease, and to observe, during the rise of interest, how much of the literature consists of reports of cures associated with surgical removal of the foci. Obviously, these were being much overestimated at first, partly through overenthusiasm, and partly because the cure was not always due to such removal, since other treatment was often prescribed, such as rest and restoratives, and antirheumatic and physiotherapeutic measures. It is interesting again to note how the fall in interest is quite as much due to experience, since the present ebb of enthusiasm results largely from failure always to cure surgically. This, one must observe, has most unduly influenced the attitude of many of the most astute oral surgeons. The result has been to encourage general dental practitioners to revert to the earlier teachings of saving teeth rather than life, of conserving appearance at the expense of health, so that it has become increasingly difficult to gain cooperation in the elimination of the foci, even when they threaten the sight.[2]

Regardless of the suffering or the apprehension of the patient, the mere raising of a doubt in regard to the outcome is sufficient to shy him away from the loss of a tooth. Refusal is very common, particularly when doubt is raised by the fundamentally conservative den-

* Read before the Section on Stomatology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. There seems to be much confusion in nomenclature and some difficulty in finding a term that will cover comprehensively all the areas involved in these infections. To speak of them as apical abscesses is hardly correct because many—often the most virulent—have no leukocytes and hence are without pus. Other areas also in and around the teeth may be involved and cause secondary infection. Wishing, if possible, to cover in one term the chronically infected areas, absorption from which, both bacterial and toxic, may produce systemic disease or secondary foci, and to limit my consideration to these types of secondary damage, I shall speak of them as "teeth" infection; this in the sense that they depend primarily on the presence of teeth at some time.

2. Failure to cure is not valid argument against the theory, particularly when teeth and eyes are concerned, because so often the attempt is made too late, as we shall later see. Once delicate retinal structures are injured, they do not come back.

tist. But it seems certain that if medical men can evolve more positive methods of orienting these primary lesions, we shall have the cooperation of dentists in their removal. I have enough faith in the judgment of dentists to believe that they will follow any lead offering relief to their patients. I have faith in the common sense of the patients if there is harmony of advice between medical and dental confrères.

Thus it may seem that, always observing disorders of unknown causation, I found something illuminating in the revived association of teeth and systemic invasion.

So we have before us two major problems which, after all, are the problems of medicine itself; viz., the attack and the defense—the invaders and the invaded.

THE INVADERS

It is a general observation, both from an extensive study of the literature and from clinical experience, that the most frequent order of etiologic probability in focal infections wherein bacteria are carried by the blood stream is: first, teeth; second, tonsils; third, intestines (the original three T's, Dr. Deaver asserting that the third "T" is the appendix); fourth, the sinuses, and, lastly, genito-urinary diseases.[3]

It is worthy of note that there has been, of late years, a very marked reduction in sinus and genito-urinary infections, due to improved methods of cure in acute and early stages; that gastro-intestinal foci are more expeditiously handled than formerly, and that treatment of one of the remaining T's, viz., the tonsils, shows improvement almost to the vanishing point.

The problem of the remaining "T," that with which stomatologists are concerned, is different. It is not easy for the patient, nor, indeed, for the 95 per cent. of the dental profession that is still under the spell of the early dental teachings, to let go of teeth. Teeth are both useful and ornamental and of immense value to digestion, though not, thanks to the wonderful dental inventions and technic, absolutely necessary.

Conclusions from Literary Research.—From even a casual survey of the literature, one is justified in several far reaching conclusions along general lines, to all of which one will doubtless subscribe without argument; viz., that:

1. The dangerous foci are usually painless.
2. The dangerous invading organisms are types of streptococci—perhaps man's greatest enemy.
3. Diagnosis cannot positively be made from roentgen-ray films alone; negative findings do not exclude lesions.
4. A so-called vital tooth may harbor a virulent infector, and thus be a dangerous focus.
5. When these foci act, the transmission is by the blood stream, in the sense that we are considering them.
6. Some "teeth" become sterile by natural methods of healing, though it is not possible always to know when it occurs.
7. Teeth foci may arise by metastases from infections elsewhere in the body, and thus be themselves secondary foci.
8. Rosenow's original postulate of selective localization seems to have been justified, so far as it concerns bacteria.
9. Rosenow's reason for the determination of the site of a secondary focus, so far as it pertains to oxygen tension, is probably correct.

3. It would seem wise to think of damage from these primary infections as arising in two ways when blood borne: one, by bacterial transmission; the other, by absorption and distribution of toxins. Selective localization and the influence of soil, oxygen, etc., refer only to bacteria that are transplanted and develop elsewhere. Though doubtless some affinity obtains with the toxin absorption from the primary lesion, it is not in the sense of a bacterial transplant, since, while the latter may increase by growth, the former is limited by its quantity or by its degree of virulence. The defense against the bacterial spread is by the phagocytic cells of the blood, acting always with the aid of antibodies; while that against the toxin is by antitoxic or combining substances that are evolved in the immunizing process.

DIAGNOSIS OF A PRIMARY TOOTH FOCUS

Knowing, then, that the attack may come from any tooth area, that the infecter is a streptococcus, that the film diagnosis is but one means of orienting it, that the bacteria or their toxic products are coming to us by the blood stream (though symptoms may reach us reflexly), and that the bacteria will grow and be destructive when they find favorable soil, or that the toxins will destroy when biochemical conditions favor, we have before us the problem of defense.

But before that, and as a part of the problem of attack, is the problem of determining, by methods other than those usually employed, whether indeed there is an active process in or around the teeth; in other words, the problem of diagnosis in a given case. In the presence of an eye symptom or a manifest lesion, what, if any, signs are there, apart from those open to observation, that might point the way?

Blood Signs.—A few years ago, my attention was called to the observation of Dr. Julius Toren that a blood cell which he called a specific type of lymphocyte demonstrable by a special type of stainability was associated with "teeth" infections—the chronic foci. This observation has not been seriously considered in otolaryngologic or in stomatologic literature, so far as I can find, nor, indeed, by hematologists, since it has been thought improbable that a specific cell could be thrown off by the submaxillary glands, as assumed by Toren. The cell noted by Toren was differentiated by Ehrlich in his original classification. All that Toren assumed was its association with these infections. It is described as a

> large lymphocyte, the outline of which is usually irregular in contour, the cytoplasm of which has not the robin's-egg blue of the normal large lymphocyte, but which has instead a peculiar grayish, grainy appearance. The nucleus is always irregular in contour and stained with a moderate degree of density. The nucleus is frequently cuboid or ovoid with one flattened side. The irregularity in shape of the nucleus does not correspond with the irregularity in shape of the cytoplasm; in other words, is not due to pressure of adjacent cells. . . . We have never found these leukocytes present in the blood of a patient who did not have oral infection, nor have we ever had a case of oral infection which did not have these leukocytes present.

There is much doubt about this cell's being a lymphocyte, since it has more the characteristics of the irritated monocyte described by Florence Sabin in her researches at Johns Hopkins. If this proves to be the case, it may well be evidence of a blood toxin, though not the result of submaxillary gland activity, and if so, it may be given these characteristics by any focus of infection that is generating such a toxin. Perhaps we shall find that these toxins develop more largely from teeth than from other foci because they result from anaerobic growth of streptococci in areas of low oxygen tension.

With the problems of medical diagnosis before me, I sought to ascertain whether I could diagnose "teeth" foci by the presence of these cells. I found them in the beginning, and continue to find them in more than 98 per cent. of all bloods examined in my laboratory. Therefore, if they are pathognomonic, then teeth infection exists in some form in practically all mouths. It is noteworthy that in cases giving negative blood findings, the mouths have appeared entirely free from infection by all tests. It is also noteworthy and confirmatory of the theory that probably not more than 2 per cent. of jaws are free from streptococcus invasion of some sort.

Dr. Toren now advises me that his findings agree with mine, and that he has come to regard 1.5 per cent. of these cells as within the normal, but that any percentage over that should be reduced by procedures directed toward the eradication of suspected infection and continued until the percentage has become within normal.

The differentiation of these cells and the staining and counting of blood cells generally is a procedure far too difficult for the ordinary laboratory technician or for the physician whose whole work is not along this line. It is a very special field, and requires much experience as well as an accurate, painstaking type of well trained mind. Toren's findings are given in Tables 1, 2 and 4, and my own series in Table 3.

I have found these cells in a surprisingly high percentage and in an unusual number of adolescents; and this finding, coming at the time of eruption of the third molars, is perhaps significant in view of the assertion by some that the delayed and impacted third molar is always infected.

In about one half of my cases, the ratios were changed by the elimination of foci in the way they should, to be in accord with this theory; in the others, it was not improved by dental surgery.

OTHER BLOOD FINDINGS

After a few months' study of these cells, however, and after careful differential counts of all suspected bloods, it became evident that other variations from normal were being found in these cases: first, low white blood counts (relative leukopenia), and second, quite generally, a relative lymphocytosis; i. e., a high proportion of lymphocytes with a lower ratio of what have been thought to be the phagocytes of the blood, the neutrophils. I was getting then a leukopenia with a lymphocytosis; that is to say, a polymorphopenia. As Table 3 shows, there was also a low degree of anemia present.[4]

TABLE 1.—*Average Findings by Toren in Entire Group of Four Hundred and Fifteen Cases of "Teeth" Infection*

Red Blood Cells	White Blood Cells	Polymorphonuclears	Per Cent.	Number	Average Normal	Mononuclears	Per Cent.	Number	Average Normal
4,750,000	6,854	Neutrophils.....	58	3,975	5,000	Large lymphocytes.....	—	—	75*
		Eosinophils.....	2.2	151	200	Small lymphocytes.....	28.3	1,953	1,500
		Basophils.....	0.5	34	30	Oral specific (?) †.....	8.9	596	—
						Large mononuclears and transitionals...	2.1	145	395
			54.2	4,160	5,230		458.0	2,694	1,970

* We distinguish between large lymphocytes and the oral specific (?) cells.
† We record the cells described by Ehrlich and thought by Toren to be specific for oral infection as "oral specific" cells (oral specific [?]).

TABLE 2.—*Toren's Average Findings in Ninety-Eight Cases of Marked "Teeth" Infection*

Red Blood Cells	White Blood Cells	Polymorphonuclears	Per Cent.	Number	Average Normal	Mononuclears	Per Cent.	Number	Average Normal
4,362,000	6,109	Neutrophils.....	51.5	3,146	5,000	Large lymphocytes.....	—	.....	75
		Eosinophils.....	2.0	122	200	Small lymphocytes.....	29.4	1,906	1,500
		Basophils.....	0.7	43	30	Oral specific.....	14.2	758	—
						Large mononuclears and transitionals...	2.2	134	395
			54.2	3,311	5,230		45.8	2,798	1,970

TABLE 3.—*Average Findings from Author's Fifty Cases Selected from Whole Series (About Two Hundred and Fifty) Because of Known "Teeth" Infection*

Red Blood Cells	White Blood Cells	Polymorphonuclears	Per Cent.	Number	Average Normal	Mononuclears	Per Cent.	Number	Average Normal
4,530,000	5,770	Neutrophils.....	56.5	3,260	5,000	Large lymphocytes.....	30.8	1,778	1,575
		Eosinophils.....	3.0	173	200	Small lymphocytes.....			
		Basophils.....	0.5	28	30	Oral specific.....	5.8	335	—
						Large mononuclears and transitionals...	3.4	196	395
			60.0	3,461	5,230		40.0	2,309	1,970

TABLE 4.—*Changes in a Marked Case Reported by Toren*

Differential count of white blood cells: "B" = before treatment; "A" = after treatment

Red Blood Cells	White Blood Cells	Polymorphonuclears		Per Cent.	Number	Mononuclears		Per Cent.	Number
B-4,640,000	B-2,715	Neutrophils.....	"B"	50	1,358	Small lymphocytes.....	"B"	35.0	950
A-5,072,000	A-7,129		"A"	65	4,634		"A"	28.5	2,022
		Eosinophils.....	"B"	25	679	Oral specific.....	"B"	9.5	258
			"A"	3	214		"A"	0.5	36
		Basophils.....	"B"	1	27	Large mononuclears and transionals...	"B"	1.5	41
			"A"	0	0		"A"	3.0	214

4. My research along this blood line was carried out without a close study of the literature. I thought I had something new, but on study of the literature for the purpose of this paper, I have been surprised and pleased to find that others, notably Deland, found lymphocytosis in nearly all of a hundred cases of "teeth" infection, and that Toren reports a similar picture. Coming in thus independently, my finding has more value than it otherwise might. On the other hand, Haden did not find such a picture in a study of 200 cases of apical abscesses, although my analysis of his previous reports on ocular lesions from dental disease does show mononuclear increase in nearly all his cases.

We have, then, some evidence of an association between these infections and the blood response; in other words, a possible evidence of "teeth" infection in the whole blood picture. This, coupled with dental findings, should be a distinct aid to treatment, the object then being to establish a normal ratio by eliminating the areas supposed to be back of these specific cells and cell ratios, and not to give up until we do.

Clinical Signs.—In my summary, I shall show clinical findings, other than the cytologic, which are of added significance and value since they indicate that, in addition to the lowered red and white blood count, we have generally the following picture: a relatively low blood pressure (hypotension); a low normal pulse and basal metabolism; subnormal temperature, and a low percentage of blood calcium which is perhaps an index of the percentage of other minerals in the blood.

SUMMARY OF DIAGNOSTIC POINTS

We have, then, this clinical and blood picture:

Low normal or low red blood cell count.
Low normal or low white blood cell count.
Relatively lowered polymorphonuclear count.
Relatively high lymphocytes.
The presence of oral specific cells (1.5 per cent. and up).
Low thyroid activity (basal metabolism).[5]
Low pulse rate.
Subnormal temperature.
Low blood calcium content.

In fact, a low normal—depressed—state of the bacterial defense.

HOW DISEASED TEETH AFFECT THE EYES

In Table 5 I have grouped eye conditions that have been found to be associated with "teeth" infection.

Group 4 of Table 5 is of the greatest interest to me, and it is on this group that we are concentrating. The degenerative types of eye lesions that I feel are the result of slow absorption of toxins have been the least studied and offer an interesting field. The central (macular) lesions, coming as they do in the adolescent period, seem to me to be in some way related to the more serious mental conditions beginning in that period of life. To me, the big problem of prevention lies here, since for every case of iritis, neuritis or keratitis, most cases of which have been proved to be of bacterial transplant, there are slowly progressing degenerative chorioretinal changes that bear the earmarks of long continued or very virulent toxin irritation on the fine vascular linings.

Internists have come to appreciate that many of the cardiovascular diseases of the middle and late years of life originate in severe diseases of early life, particularly scarlet fever, through the circulation then of virulent streptococcus toxins leading to microscopic changes in the delicate vessel walls which later become the sclerosed vessels of cardiac and kidney lesions and the whole chain of degeneration connected with them. Certainly the continued blood passage of virulent toxins of streptococcus from teeth would do no less; and quite as certainly, to remove these foci after the changes have occurred would have only palliative value.

In a very early paper on this subject, Lang expressed his belief that most of the cases of so-called senile degeneration of the choroid and retina would be found to be due not to the changes of years but to absorption of toxins from foci of infection. Hovde reports a case in which a patient with a central scotoma recovered after extraction of the tooth and, in connection with the subject of degeneration of the macula and central blindness, the observation of Nettleship that they might be due to "nutritional" disturbance is perhaps prophetic. Stock thinks that an autocytotoxin or cell solvent exists in the blood, and Stargardt conceives of the action as a specific one on these delicate cells—a biochemical selective affinity; while Oatman, noting that often these changes occur at puberty, speaks of it as perhaps a coincidence. All of these theories combine in that to which I hold; namely, that the degeneration comes about as an endarteritis or a capillary phlebitis from toxic absorption.

TABLE 5.—*Conditions Associated with "Teeth" Infection*

1. Reflexly (16 cases in author's series)
   - A. Over sensory pathways
     1. Ocular pain
     2. Headache simulating that from strain
   - B. Over motor pathways
     1. Weakness of accommodation
     2. Spasm of accommodation
     3. Spasm of lids
     4. Extra-ocular motor imbalance
   - C. Over vasomotor pathways
     1. Through the lacrimal glands; tearing
     2. Through vasodilatation; congestions, styes, etc.
2. By continuity of structure (no cases in author's series)
   - A. Extra-ocular infection, cellulitis or abscess
     1. Through paranasal sinuses
     2. Through the fascia
3. By bacterial transplant (through blood stream) (seven cases in this series)
   - A. Cornea
     1. Direct
     2. Secondarily from neuritis of facial nerves
   - B. Iris and ciliary body
   - C. Anterior choroiditis
   - D. Panophthalmitis
   - E. Neuritis of optic nerve
   - F. Neuritis of motor nerves
4. Through toxic absorption (twenty-six cases in this series)
   - A. Disordered accommodation
   - B. Disordered muscle balance
   - C. Ocular vertigo
   - D. Central chorioretinitis
   - E. Senile chorioretinitis
   - F. Angiopathic retinitis
     1. Macular degeneration
     2. Exudative
     3. Hemorrhagic
     4. Arteriosclerotic
   - G. Retinal hyperesthesia
   - H. Cataract (?)
   - I. Glaucoma (?)
   - J. Central types; mental confusional; cerebellar
5. Anaphylaxis (sensitization) (five cases in this series)

Quite in keeping with these findings and with that of observing neurologists, the associated mental diseases are also of the depressive type. These subjects are apt to be blue and introspective. They have to push to go. They have low oxygen consumption and tend to form deposits in the unused muscle sheaths of the body, leading to infiltration, myositis, etc. Favored sites for these deposits are between the shoulders, in the nape of the neck and in the inner thighs, with occasional infiltration in the back muscles.

I know of no better simile than the automobile, since the choked carbureter with too little air is like this "hypo" patient in producing waste products, and the resulting carbon deposits are not unlike those in the human machine. Too little air is burned in the mixture.

MANAGEMENT OF THESE CASES

The technical part of the defense side of the problem must be left for a future communication. However,

5. In 1923, cooperating with my laboratory associate, Anne Peterson, I tabulated some 2,500 basal metabolism tests in relation to pulse rate to determine whether the pulse rate was a diagnostic indication of thyroid function, and was able to show that a pulse rate below 68 in men or 72 in women is indicative of hypothyroidism. Therefore, if a patient has a pulse rate below these low normals, one may safely prescribe thyroid gland substance in daily doses of one-half grain (0.03 gm.), increasing until the rate comes to normal. If the pulse rate is high, the patient should be referred to an internist for proper test and therapy.

as the result of the findings reported above, I have formulated certain methods of procedure in these cases after the diagnosis is confirmed, which may be of interest.

Every case has its threshold of safety. When I find that a patient is below the normal range of the picture, the physical findings of the internist being otherwise negative, I aim at once to ask the cooperation of the patient's dentist in the elimination of suspected foci in the order of their probability. Often we fail to get this, in which case we put it up to the patient.

But I do not favor any operative procedure in cases in which our findings are below the low normal.

If a white blood count under 4,000 is found, one should be on one's guard. If under 3,000, one should not operate. In either event the patient should be put on a green, leafy vegetable and fruit diet, and alkaline types of food, particularly the citrus fruits, should be given. If indicated, small doses of thyroid should be prescribed, for its detoxicating effect, as well as about a dram (4 gm.) of calcium lactate once a day, and ten or twelve general treatments of ultraviolet irradiation properly graduated. In my hands, no reconstructive defensive weapon has equaled ultraviolet irradiation in these cases. Grove and Vines reported remarkable increases in white blood cell count and in blood calcium, two indexes of resistance by the employment of calcium and parathyroid. I have never seen such improvement from these drugs alone; and although in the early cases I did use both these and ultraviolet rays, I later dropped the parathyroid, since there is no proof that it is absorbed when taken by mouth. I have also tried the calcium alone, only to find that the improvement did not persist. Now, however, with the calcium and ultraviolet rays combined, I both obtain and hold the increase, though I have never been able to push the white blood cell count very high. The ionizing power of ultraviolet rays on the minerals of the blood seems to stimulate the white blood cells to greater phagocytic activity. I have never failed to improve the clotting power by the use of ultraviolet irradiation, and, though I do not mention it in the summary, I have come to believe that the clotting time is an index to the condition of the patient and the degree of infection. I do all of the actinotherapy under control of the blood findings. In one case, it was not tolerated and had to be discontinued.

When one has succeeded in raising the threshold of safety, then the surgical procedures should be limited to one or two areas at a time. One will be surprised at the quickness of healing and will be amply repaid for thus limiting one's risks.

It must always be remembered, however, that it takes a much higher degree of immunity to raise the threshold when there is an area of infection anywhere, and it is difficult to cure such areas because of the low circulation in them; but, when the blood immunity is first raised and then the area drained, the improvement is remarkable.

Unfortunately, from the standpoint of the eyes, the patients come to us only after the damage has been done. As pointed out earlier in the paper, the retina being made up of brain cortical cells and containing the parent nuclei whose destruction means degeneration of the afferent fiber, there is seldom complete recovery, and often no change after operation. Therefore, if we are to do our whole duty, we must endeavor to remove these foci before the injury has been done.

PROBLEMS

If we can develop an early diagnosis by laboratory and clinical methods so as to get patients into the hands of dentists early, prevention will be made possible.

I am now undertaking the following researches:

1. A research to determine by experimental methods whether there are blood changes pathognomonic of infections of the type found in teeth.

2. A research to determine whether we can improve the bactericidal valence of the blood by:

(*a*) Ultraviolet irradiation.

(*b*) Vaccine inoculation employing the new control method of Wright.

(*c*) The employment of toxin and antitoxin methods for testing and for developing immunity.

If the first research should prove successful, diagnosis could easily be established, after which the program of treatment could be charted. If the second proves successful, it is not vain to hope that not only the body may be protected from systemic invasion, but that the teeth may be saved, even after the pulps are destroyed. Thus, perhaps, the brilliant work of this generation of dentists shall not have been in vain.

This may be far off or it may be near. With all the workers in the untilled field of preventive medicine, who shall say?

1507 Hinman Avenue.

ABSTRACT OF DISCUSSION

Dr. Edward H. Hatton, Chicago: The crux of this paper lies in the method of laboratory diagnosis that is proposed. Can one diagnose chronic mouth infection by blood examinations? Sometime ago we made nearly 1,000 blood examinations of all persons who came to our clinic requiring full mouth roentgenograms, and we came to these conclusions, which have been verified by others: First, while it is true that in chronic infections of any type there is usually a relative lymphocytosis, this is only present in, perhaps, from 60 to 70 per cent. of the cases. Second, while leukopenia, or a reduced white cell count, is frequently found in chronic infections around the apexes of the teeth, it is not constant. In these counts, and in others that I have made in and out of hospitals, except in typhoid, none has been found below 5,000 white cells. Whether or not there is such a type of cell as is described by Toren is still a problem. As far as I know, Dr. Toren and Dr. Walter are the only two men who have identified this cell and can recognize it in blood smears. The diagnosis of chronic appendicitis and chronic salpingitis by blood smear examinations has been proposed because of similar changes in the differential count, but I know of no reason why lymph glands stimulated by infection in one part of the body should produce a typical cell; I know of no reason why the mesenteric glands, for example, should not produce this cell if the same sort of organism was found in the appendix as is found around the roots of the teeth, or in the lymph glands of the pelvic region. If this method of diagnosis is not reliable, then the contention of the author cannot be considered as proved.

Dr. Vilray P. Blair, St. Louis: This paper is too broad to be discussed with a criticism of one phase of it which probably not one of us is willing to accept. There are so many other things in the paper that are so absolutely true that I think they also should be at least noted in the discussion. I am a general surgeon, not a specialist. One interesting phase of the whole paper is that the specialist who first segregated himself from general practice to concentrate on a particular study is now reaching back over the whole field of medicine, not only to bring it to himself but to contribute to it. It is a constant interchange that must go on through the whole field. I cannot quote the source or the date, but 2,500 years ago some physician told one of the old kings, and left it on stone tablets, that the pain in

his back, in his head and in his feet was due to his teeth and that he would not get well until his teeth were extracted.

DR. WILL WALTER, Evanston, Ill.: I am really not contending anything; I am just recording what we have found. I do not think that the laboratory alone can prove anything. I know that unless one uses a very definite stain in a very particular way, he will not get the differentiation. I feel very much encouraged about there being something in this cell diagnosis, because of Dr. Sabin's research work in blood cytology at Johns Hopkins. Her studies in vital staining seem to have uncovered much, particularly as to the monocyte and the changes in its staining qualities in the presence of toxins. I do not think the Toren cell is a lymphocyte. It seems to be an irritated monocyte. If, therefore, monocytes are subject to irritation and do undergo changes in the presence of discases, such changed cells would be pathognomonic of the disease producing the toxin, and if on removal of the teeth lesions the irritated cells disappear, that is clinical proof of their importance. But no experiment ever has been offered to prove or disprove this diagnostic point. What we are going to do is to see whether we can produce these cell changes, and if we can do so by experimental infection of the jaw, by the introduction of the toxin intravenously or by any other means, we shall then know that there is something to this method of diagnosis. We do know that we get this picture of a generally low condition in cases of chronic teeth infection, and it is quite within the realm of reason to believe that virulent toxins will cause changes in the blood cells. They circulate through the whole body and affect all the tissues of the body. I wish to be understood as not arguing for Dr. Toren or for anybody. I simply present what we have found. We hope to follow it out and thus to be of some service to our patients and to the profession.

STOOL EXAMINATION FOR PROTOZOA

IN ELEVEN HUNDRED INMATES OF A NEW YORK STATE INSTITUTION *

WALTER S. THOMAS, M.D.
AND
E. A. BAUMGARTNER, M.D.
CLIFTON SPRINGS, N. Y.

Reports on the incidence of intestinal protozoa have appeared from time to time and from various parts of the country, but so far as we know there have not appeared recently any extensive studies from New York State.

Through the cooperation of the superintendent and his staff we were able to obtain stool specimens from 1,122 inmates of a New York State school for feebleminded women, and it is the result of these examinations that we report.

The great majority of the inmates were of the poorer class, all were below normal mentally, all were females, and all were confined in an institution where many of the inmates themselves are employed in the capacity of servants for the others. These people form a group in which a high rate of infestation of intestinal protozoa would not be considered remarkable. The fact that the rate is comparatively low, especially so far as the pathogenic protozoa are concerned, seemed to us to be of sufficient interest to report.

For one or more of the characteristics mentioned above, this group can scarcely be considered as typical of the residents of the state, but they have all lived in New York for a greater part of their lives, and most of them were born there and have never lived elsewhere.

Our figures represent the results of examinations of a single stool from each of the inmates. Practically all of the specimens were examined in the fresh state, and none were more than four hours old. The majority were examined in the summer months, while the specimens examined in the cooler weather were kept warm by artificial means.

The method of examination was as follows: A small bit of the feces was emulsified on the slide in a weak (from 1:1,000 to 1:10,000) solution of neutral red in 0.85 per cent. salt solution. The vegetative amebas and the living flagellates take up this dye, making their detection easy. Cysts do not take up the dye but are nevertheless readily seen. A second preparation was made, compound solution of iodin or one of the iodin-eosin mixtures of Kofoid[1] or Donaldson[2] being employed as a diluent; these preparations helped rule out bodies sometimes mistaken for cysts, and in some instances identification of the organisms was possible by this means alone; but the final test was the examination of film preparations fixed in Schaudinn's fluid and stained with iron hematoxylin. For the criteria used in the identification of the various organisms we consulted the publications of Dobell and O'Connor,[3] Boeck and Stiles,[4] and Kofoid.[1]

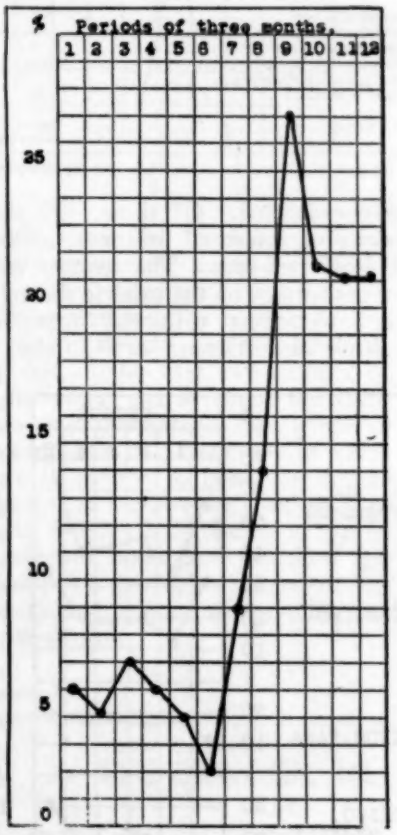

Chart 1.—Variations in incidence of intestinal protozoa obtained on the same class of patients as a result of more intensive study.

This is not a report of expert protozoologists, but as evidence of some degree of familiarity with the subject we offer a chart (Chart 1) which records our progress in the study of these organisms. The time covered by this chart is three years; this has been divided into periods of three months and, as indicated, the curve represents the percentage of positive cases in each period.[5] In the sixth period our interest was aroused to a point at which special study on the subject of intestinal protozoa was found necessary, from that time we have had a steady rise in the percentage of

* Read before the Section on Gastro-Enterology and Proctology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Kofoid, C. A.; Kornhauser, S. I., and Swezy, Olive: Criterions for Distinguishing the Endameba of Amebiasis from Other Organisms, Arch. Int. Med. **24**: 35-50 (July) 1919.
2. Donaldson, R.: An Easy and Rapid Method of Detecting Protozoal Cysts in Feces by Means of Wet-Stained Preparations, Lancet **1**: 571-573 (April 14) 1917.
3. Dobell, Clifford; and O'Connor, F. W.: The Intestinal Protozoa of Man, London, John Bale Sons and Danielsson, 1921.
4. Boeck, W. C., and Stiles, C. W.: Bull. 133, Hyg. Lab., 1923.
5. Thomas, W. S.: Intestinal Protozoa in a Series of Three Hundred and Eighty-Two Patients, Clifton M. Bull. **8**: 27-30 (Oct.) 1922.

positive cases. A peak is reached in the ninth period, nine months after the beginning of our intensive study, after which the curve becomes flat. That this represents only the increased knowledge of the subject is evident when it is known that the class of patients studied remained the same during the entire time.

This work was done on patients entering our own hospital, and it was not until after the curve became flat that we began the study here reported.

Table 1 shows our findings in the institutional patients. Specimens from a total of 1,122 patients were examined. Of these, 499 showed one or more species of intestinal protozoa, giving a total incidence of 44.47 per cent. The number of positive cases and the percentage of the total is shown and also the multiple infestations with the organisms present. The multiple infestations are to be read as follows: *Endolimax nana* and *Chilomastix mesnili* occurred in the same specimen fifty-eight times, and *Endameba coli* and *Chilomastix mesnili* thirty-eight times, and in the case of the triple infestations *Endameba coli, Chilomastix mesnili* and *Endolimax nana* occurred in the same specimen fourteen times. There were 348 instances of infestation by a single organism, 126 in which two were present, twenty-four in which three were seen and one in which there were four species.

The chief points of interest in this table are the relatively high incidence of *Chilomastix mesnili* and the low figure for *Endameba histolytica.*

It is possible that we have a greater number of *Chilomastix mesnili* in this section of the country than any other, but it is more probable that one reason for the high figure is the fact that the stools were examined in the fresh state while the organisms were still motile and therefore more easily detected. Boeck and Stiles [4] quote Matthews and Smith [6] as reporting 23 per cent. infection with chilomastix in an asylum. Since, in infections with the chilomastix, greater numbers of the organism are seen than in almost any other intestinal protozoon infection, the chances of transfer would be greater, all other things being equal, and in an institution where personal contact is constant this transfer is readily accomplished.

Chilomastix mesnili is not considered pathogenic by the majority of observers, and the high rate of infestation here is possibly of academic interest only; but in considering *Endameba histolytica,* an organism generally recognized as pathogenic, the interest is more than an academic one.

In considering the low figure for *Endameba histolytica* obtained in a class of people in which one might expect a high figure, only two possibilities come to mind in the way of explanation: (1) that *Endameba histolytica* is present less often in the cases studied here than those reported from other localities or (2) that we overlooked a great many.

It is generally conceded that only one third of the cases of protozoon infestation are brought to light in a single examination. Assuming that this figure is correct, which we do not doubt, if we can apply the figure to the individual organism we would still have only 3.2 per cent. showing *Endameba histolytica,* a percentage considerably lower than those given by the majority of workers in this field. It is important to note that none of the persons having *Endameba histolytica* showed any signs of amebic infection either before or after the examination.

We have made an attempt to analyze the foregoing figures in the light of data we had as to age, period

Table 1.—*Findings in 1,122 Patients in a New York State Institution*

		Multiple Infestations																	
		Double									Triple						Quadruple		
	Single																	Total	Per Cent.
Endameba coli	116	..	38	22	...	...	1	...	...	...	14	3	...	2	...	...	1	200	17.83
Endolimax nana	98	58	..	22	...	...	...	...	1	...	14	...	3	...	1	1	1	199	17.74
Endameba histolytica	8	..	..	..	...	...	...	1	...	1	..	...	...	...	1	1	...	12	1.07
Chilomastix mesnili	111	58	38	..	3	1	...	...	...	1	14	3	3	2	1	...	1	236	21.03
Trichomonas hominis	...	..	..	..	...	1	...	...	...	...	..	...	...	2	...	...	...	3	0.26
Giardia lamblia	13	..	..	..	3	...	1	1	1	...	..	3	3	...	...	1	1	27	2.40
Total	348					126							24				1	499	44.47

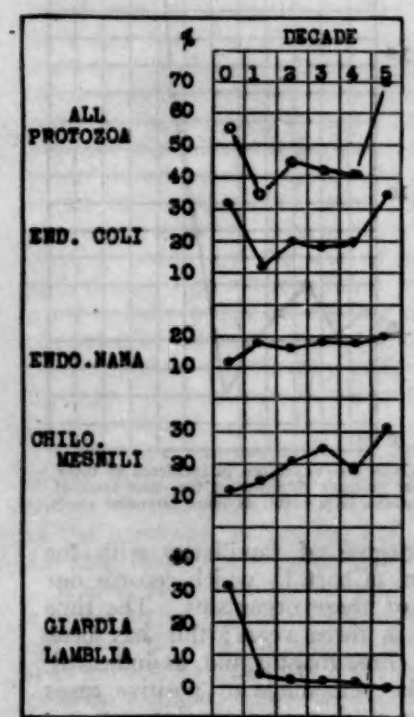

Chart 2.—Influence of age on incidence of infestation.

Table 2.—*Average Age and Incidence of Infestation with Protozoa in the Various Houses of the Institution*

House	Number of Inmates	Average Age	Positive	Negative	Per Cent. Positive
A	86	26.16	47	39	54.6
B	138	28.57	59	79	42.7
C	147	39.27	62	85	42.4
E	72	27.47	36	36	50.0
F	70	29.98	42	27	60.1
G	88	31.02	46	42	52.2
H	88	30.97	45	43	51.1
I	85	32.01	33	52	38.8
Moss	44	28.5	20	24	45.5
Wilbur	40	18.9	21	25	45.7
Burnham	122	19.0	47	75	38.5
Hospital	74	24.6	14	60	19.0
Infirmary	46	32.4	23	23	50.0
	1,100*	28.37	496	610	44.8

* The discrepancy between this figure and the total of 1,122 patients is due to the lack of data as regards the age in some of the patients.

6. Matthews, J. R., and Smith, A. M.: The Spread and Incidence of Intestinal Protozoal Infections in the Population of Great Britain, IV, Asylum Patients, V, University and School Cadets, Ann. Trop. Med. 13: 91-94 (May) 1919.

of residence in the institution, the different dormitories, and the time of year examined.

A slightly higher percentage was found in the summer months than other times of the year, but it was inconsiderable. There is a rather wide variation in the different houses as shown in Table 2. Dormitory F showed the highest incidence (60 per cent.), and the hospital the lowest (19 per cent.). No satisfactory explanation for this variation was found. Among the possibilities suggested was that of the matrons and their attitude toward their charges, but on inquiry the authorities stated that the matron of Dormitory F was among the most efficient. Other possibilities considered and investigated gave no better results. The average age was scarcely expected to give any information, as young and old occupied all houses, and consultation of the table will show that the variation is not marked. In Table 3 the cases are grouped according to age; Chart 2 shows the result graphically. *Endameba histolytica* and *Trichomonas hominis* are not included in the chart, since they comprise such a small number of the cases. It will be noted in the table, however, that all the cases of *Endameba histolytica* infestation occurred between the ages of 20 and 40. There is a slight but steady increase in the percentage of *Chilomastix mesnili* as the age increases; the *Endolimax nana* varies but little from the first to the sixth decade. There is a sharp drop in *Giardia* after the first decade, while *Endameba coli* parallels the total incidence.

The small number of cases examined in the first and last decades makes it unwise to draw conclusions.

In institutions, especially those in which the inmates are employed as help, cross infection is to be expected.

TABLE 3.—*Influence of Age on Occurrence of Various Protozoa*

	Age of Patients											
	0 to 10		10 to 20		20 to 30		30 to 40		40 to 50		50 to 60	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Endameba coli	5	31	23	12	75	20	61	17	30	19	3	33
Endolimax nana	2	12.5	34	18	71	16	61	18	29	18	2	20
Endameba histolytica	0	0	1	0.53	5	1.3	4	1.2	2	1.27	0	0
Giardia lamblia	5	31	6	3.7	11	3.0	4	1.1	1	0.6	0	0
Chilomastix mesnili	2	12.5	28	14.9	73	20	86	25.1	30	19.1	3	33
Trichomonas hominis	0	0	1	0.53	1	0.27	1	0.29	0	0	0	0
Total patients	16		188		365		334		157		10	
Positive	9	56.2	68	36.1	170	46.5	153	44.7	68	43.3	7	70

TABLE 4.—*Influence of Residence in Institution on Incidence of Protozoal Infestation*

Years	Negative	Positive	Total	Per Cent.	Months	Negative	Positive	Total	Per Cent.
0	78	41	119	34.4	0	12	3	15	20.0
1	100	88	118	45.7	1	7	5	12	41.6
2	36	33	69	47.8	2	8	9	17	52.8
3	38	27	65	41.6	3	8	7	15	46.6
4	36	29	65	44.7	4	11	8	19	42.6
5	30	26	56	46.5	5	7	6	13	46.1

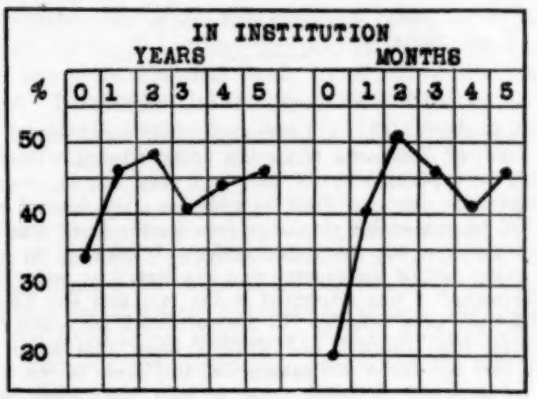

Chart 3.—Influence of residence in the institution on the incidence of protozoal infestation.

To ascertain, if possible, some idea of the degree, we listed the inmates according to their term of residence and found a distinct rise in the incidence of infestation in the first year. Those confined for a year or less were then listed according to months, and it is seen that there is also a sharp rise in the first two months of residence, the curve flattening out at about the third month. The numbers and percentages are given in Table 4 and the curves in Chart 3. The curve in which the residence in years is plotted is based on a fair number, but in that based on months the number is so small that it is doubtful whether the conclusion can be drawn that all cross infection takes place within a few months. Table 5 shows the findings of some of the observers in this country and abroad with our figures in the last row for comparison.

TABLE 5.—*Observations of Other Workers for Comparison**

Name	Reference	Number of Cases	E. Histolytica	E. Coli	E. Nana	Chilomastix Mesnili	Trichomonas Hominis	Giardia Lamblia	Incidence
Kofoid, C. A.; Kornhauser, A. I., and Plate, J. T.	J. A. M. A. **72**: 1721 (June 14) 1919	1,500	9.2	25.9	28.9	6.0	0.26	5.4	65
Kofoid, C. A., and Swezy, Olive (Overseas troops)	New Orleans M. & S. J. **73**: 4 (July) 1920	2,300	12.8	20.5	29.3	4.2	0.1	5.7	—
Kofoid, C. A., and Swezy, Olive (Home troops)	New Orleans M. & S. J. **73**: 4 (July) 1920	576	4.3	15.9	27.8	3.5	0.2	6.4	—
Lyon, M. W., Jr.	J. A. M. A. **72**: 326 (Feb. 1) 1919..	103	6.1	1.4	—	—	1.8	1.2	56
Carter, H. F.; Matthews, J. R.; Mackinnon, Doris, and Smith, A. M.	Med. Research Comm., London, Special Report Series, No. 7, p. 122, 1918	1,680	12.4	26.2	18.0	5.0	0.77	13.4	51
Carter, H. F.; Mackinnon, Doris; Matthews, J. R., and Smith, A. M.	Ann. Trop. Med. **10**: 411 (Feb.) 1917	910	10.2	25.4	—	2.6	0.12	18.6	44.2
Giffin, H. Z.	J. A. M. A. **61**: 675 (Aug. 30) 1913	1,700	4.6	8.7	—	—	—	—	—
Sanford, A. H.	J. A. M. A. **67**: 1923 (Dec. 23) 1916	5,000	10.7	5.7	—	—	—	—	—
New York series		1,122	1.07	17.8	17.7	21.0	0.26	2.4	44.4

* The authors' figures appear in the last line.

SUMMARY

In 1,122 inmates of a New York state institution, 44.47 per cent. showed intestinal protozoa on examination of a single stool specimen from each. There is evidence of cross infestation in the institution. The influence of age is not great except in the case of *Giardia lamblia*, in which the young persons are more often infested. *Chilomastix mesnili* was the organism most often found. *Endameba histolytica* was seen in only 1.07 per cent. of those persons examined. Taking

this low figure into consideration, together with the facts that we are dealing with a class of patients in which a high incidence might be expected, that the patients were all confined in an institution where cross infestation takes place and that none of the 1.07 per cent. with *Endameba histolytica* had at any time shown any evidence of amebic disease, we feel justified in believing that *Endameba histolytica* plays only an insignificant rôle in the production of disease in New York State.

ABSTRACT OF DISCUSSION

Dr. Charles G. Lucas, Louisville: The incidence of only 1 per cent. of *Endameba histolytica* is very small. That can possibly be explained by the fact that only one examination was made. In our own work we examine a warm stool every day. Of course, in this particular instance the work was done in an institution for the feebleminded. I know of no other work in my part of the country that has been done under these circumstances. I was interested in the fact that Dr. Thomas found 2.4 per cent. *Giardia*. In my own work we found more *Endameba* than *Giardia*, and while I know that some men believe that *Giardia* is not pathogenic, still some of the worst cases of intestinal parasites, three at least, have been caused by *Giardia*. One man has been from the Atlantic to the Pacific in search of relief; he has had his teeth out, gallbladder and appendix removed, and, only lately, at the Johns Hopkins Hospital, where he was given mercurochrome through a tube, did he get any relief. During the time he was having the greatest trouble, he received the greatest relief from the use of the duodenal tube each night. The gross infections, I think, can be explained by the mental condition of the patient. I can well remember the first time we ever found *Edameba* in the stools. Dr. Smithies found the organisms. The patient had been in the habit of going down the Mississippi. Stimulated by the protozoal infections in the Middle West, we have been in the habit of examining warm stools and have been very much surprised at the number of stools we have found infected.

Dr. Sidney K. Simon, New Orleans: One phase of Dr. Thomas' paper that was interesting to me might bear some emphasis. This is entirely apart from the low incidence of *Endameba histolytica* in the New York institution, which, of course, was much lower than the general figures averaged by Kofoid's examination of the stools during the war. Kofoid found 12 per cent. infection in the recruits going overseas. The phase that I speak of, however, is that of this 1 per cent. of *Endameba histolytica* infections, none showed any effects of disease. A fact that is very commonly overlooked is the comparative frequency of *Endameba histolytica* without clinical evidence. This represents more than mere statistical evidence, and is a distinctly interesting clinical phase. Surgeons have recognized for a long time that many patients with abscess of the liver have a liver lesion without ever having had any intestinal symptoms, and in studying *Endameba histolytica* in the routine examination of stools, I have found a rather high percentage of *Endameba* infection, almost 5 per cent., without any clinical evidence of disease. These patients, nevertheless, are potentially diseased and are to be looked on as carriers of the disease, because, after all, the disease is carried by the cyst. I have found that in almost every instance in the so-called symptomless *Endameba histolytica* patients there is some deviation from the normal condition. They are generally run down, with a secondary degree of anemia, digestive disturbance, etc. They bear some imprint of this intestinal infection which is of such low virulence as not to produce clinical symptoms, but which is sufficient to influence the normal health condition. Many persons with *Endameba histolytica* infection who are not definitely sick and who improve when their general health condition is relieved, are carrying the infection most extensively.

Dr. Anthony Bassler, New York: There will be reported at the meeting this year some of Dr. Wood's work in connection with carcinoma production in the rat, and I think all will agree when they become cognizant with his laboratory work that the incidence of production of rat carcinoma is dependent on two things: First, that there is a definite hereditary strain, which requires the reproduction of rats to be carried through generations of rat-bearing carcinoma with their intermating; and second, that with the implantation of carcinoma in the rat, its take is largely dependent on the simultaneous inoculation of some intestinal parasite accompanying the implantation. At the present time, the tinea is used. No doubt other parasites would serve just as well because it is handy. Thus there is a rather strong suggestion that perhaps the question of carcinoma in the human may in some way be bound up in the frequency with which parasites are found in the bowel of the human being.

Dr. W. S. Thomas, Clifton Springs, N. Y.: We realize that our figures are very low indeed. We were surprised to find them so low. Most of the figures in the comparative table shown are from single examinations.

FURTHER STUDIES ON THE DICK TEST *

P. S. ROSEN, M.D.; P. B. SADOWSKI, M.D.
AND
L. A. KOROBICINA
MOSCOW, RUSSIA

We have made 2,487 Dick reactions on healthy persons among the inhabitants of the small manufacturing town Jarcewo, in the Smolensky district.

The reaction was made with the toxin of the Metchnikoff Institute, purified after the Hentoon process. The strength of the toxin was 1:500. We have obtained 867 positive and combined reactions, or 34.9 per cent., a lower percentage than that obtained in Moscow. This difference may be explained by the fact that there was an epidemic of scarlet fever at Jarcewo.

Out of twenty-nine old persons, most of whom were over 60, there was only one with a slight positive reaction.

It is noteworthy that during the epidemic of scarlet fever in the Farröer islands at Tjornshown, there were ill with the disease only 2.9 per cent. of the inhabitants between the ages of 40 and 60 years, and only 1.8 per cent. of the persons over 60.

Of 179 persons who declared they had previously been ill with scarlet fever, 63, or 35.2 per cent. showed a positive or combined reaction. Of course, not all of these declarations can be relied on.

We tried also to learn the influence of living conditions on the results of the Dick reaction. Although the data were not sufficiently numerous to enable us to make definite deductions, we did ascertain that very young children in families with a higher standard of living had a retarded spontaneous immunization and gave a higher percentage of positive reactions.

At the age of 6 and over, this difference was found to disappear; a condition that probably may be explained by the fact that children at this age begin to attend school, where all groups are subjected to equal conditions.

As soon as children reach the age of adolescence, if their living conditions are good, they show a quick decrease of percentage of the positive reaction, while others who are deprived of good living conditions show only a slight decrease from 32.6 to 30 per cent. Apparently persons subjected to bad living conditions are more liable to get sick.

* From the epidemiologic section of the Metchnikoff Institute for Infectious Diseases, Prof. S. B. Korshun, director.

Among 867 children with positive and combined Dick reaction, there have been only seven cases of scarlet fever; so far all of them showed a negative Dick reaction after their recovery.

Among 1,620 children with negative and pseudo-negative reactions, there has been no case of scarlet fever.

PULMONARY IMMUNIZATION

ITS BEARING ON THE ORIGIN OF ANTIBODIES

W. H. MANWARING, M.D.
Professor of Bacteriology and Experimental Pathology, Stanford University School of Medicine
FRANCIS I. O'NEILL, A.B.
KENNETH W. THOMPSON
AND
LEONARD G. DOBSON
STANFORD UNIVERSITY, CALIF.

Contrasted with our wealth of knowledge concerning changes in blood plasma and in tissue lymph during immunization, the almost total lack of knowledge concerning possible immunologic adaptations in fixed tissues is a striking fact. Nevertheless, there is reason to believe that immunologic adaptation of fixed tissues plays an important rôle in bodily resistance, the dominant rôle in the immunity against certain infectious diseases.[1] Adequate knowledge of fixed tissue changes in immunity may in time give therapeutic methods as valuable as the methods that have thus far resulted from serum study.

Practically the only physiologic studies so far made of immune tissues are a few tests of the reactions of isolated smooth muscle and isolated lungs of immune guinea-pigs. Perfused free from circulating antibodies, these tissues are apparently identical, physiologically, with anaphylactic tissues.[2] This has led to the tentative generalization that bodily adaptations in immunity probably consist of the development of an underlying fixed tissue hypersensitiveness, masked or protected by circulating antibodies. In attempting physiologic analyses of canine immune tissues, we have obtained results not in accord with this conception. This difference is well illustrated by perfusion tests with isolated canine lungs.

ISOLATED ANAPHYLACTIC LUNGS

If the lungs of actively [3] or passively [4] sensitized dogs are washed free from contained blood by a preliminary perfusion of Locke's solution and are then perfused with Locke's solution containing a small amount of specific foreign protein, the following anaphylactic reactions are observed: (*a*) a 75 per cent. reduction in the rate of perfusion flow, the reaction becoming maximal by the end of three minutes; (*b*) marked explosive pulmonary edema, with the escape of large amounts of perfusion fluid from the trachea, and (*c*) prompt and complete pulmonary fixation, with no collapse of the lungs on releasing the tracheal clamp.

These reactions are indexes of the anaphylactic potentiality of hypersensitive lungs, comparable with the anaphylactic potentiality of smooth muscle as revealed by the Dale technic.

ISOLATED IMMUNE LUNGS

If the lungs of immune dogs are similarly washed free from circulating antibodies and are then perfused with Locke's solution containing a primarily nontoxic specific foreign protein, there is a complete absence of anaphylactic reactions. The perfusion rate remains constant till the end of the test (ten minutes); there is no suggestion of edema, and the lungs collapse promptly and completely when the tracheal clamp is released. Within the limits of the experimental error, these lungs give reactions identical with those of normal canine lungs. There is no difference observed between actively and passively immunized lungs. Tests with primarily toxic foreign proteins have not yet been made.

CONCLUSIONS

These tests give a conception of immunologic adaptations of fixed tissues not in accord with current views. They indicate the removal or the masking of the preliminary fixed tissue hypersensitiveness, the development of fixed tissue resistances that in themselves would fully account for immunity, unassisted by circulating antibodies.

As the lungs of passively and of actively immunized dogs are apparently identical in these tests, the tests give no evidence that any tissue represented in the lungs acquires properties during active immunization that cannot be accounted for by the local absorption or fixation of circulating antibodies. The experiments, therefore, give no support to the current hypothesis that the main or sole site of antibody formation is in the reticulo-endothelial system.[5] They do not, however, rule out the possibility of antibody formation by this system.

1. Manwaring, W. H., and Bronfenbrenner, J.: Intraperitoneal Lysis of Tubercle Bacilli, J. Exper. Med. **18**: 601, 1913.
2. Manwaring, W. H., and Kusama, Y.: Analysis of Anaphylactic and Immune Reactions by Means of the Isolated Guinea-Pig Lungs, J. Immunol. **2**: 157 (Feb.) 1917.
3. Manwaring, W. H.; Chilcote, R. C., and Hosepian, V. M.: Capillary Permeability in Anaphylaxis, J. A. M. A. **80**: 303 (Feb. 3) 1923.
4. Manwaring, W. H.; Hosepian, V. M., and Enright, J. R.: Passive Pulmonary Sensitization, J. A. M. A. **82**: 1104 (April 5) 1924.
5. Gay, F. P., and Clark, A. R.: The Reticulo-Endothelial System in Relation to Antibody Formation, Proc. Soc. Exper. Biol. & Med. **22**: 1, 1924.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

NEUTRAL ACRIFLAVINE-ABBOTT (See New and Nonofficial Remedies, 1925, p. 134).

The following dosage form has been accepted:

Neutral Acriflavine Jelly 1:1,000-Abbott: Neutral acriflavine-Abbott. 0.1 part, dissolved in karaya gum jelly, containing sufficient sodium hydroxide so that the finished product has a p_H of from 8.5, to make 100 parts.

Who Shall Treat the Sick?—Concerning the practice of medicine, it is maintained by some that an individual's disease is his own concern, and that he has a perfect right to employ any one, trained or otherwise, to treat him. There is no doubt that it is a dangerous fraud for an individual to represent himself as qualified to treat disease and care for the sick by claiming the possession of knowledge and experience in treating disease which he does not possess. This means that no individual has a right to commit a fraud. It ought to be the duty of the state to prevent the perpetration of dangerous frauds, especially when they concern, not merely the individual who is defrauded, but other members of the community. —Waring, H. J., Osteopathy, Chiropractic and Medicine, *Brit. M. J.* **2**:682 (Oct. 17) 1925.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET . . . CHICAGO, ILL.

Cable Address . . . . . "Medic, Chicago"

Subscription price . . . . . Five dollars per annum in advance

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SATURDAY, NOVEMBER 28, 1925

WHAT DO CANCER STATISTICS REVEAL?

Medical statistics, especially cancer statistics, are notoriously open to various interpretations. A lay statistician, to whom a recorded diagnosis means that death was undoubtedly the result of the disease to which the diagnosis attributes it, will draw conclusions different from the analysis made by a physician untrained in the methods of the statistician. The latter is likely to avoid pitfalls that trap the nonmedical statistician and to fall into errors that the statistician avoids. A still different result is likely to be reached by a pathologist studying the same figures. He, with his daily observation of the margin of errors in diagnosis, especially of cancer, is likely to discard many figures that would be accepted by both the statistician and the clinician, or give to them an entirely different interpretation. The German pathologist Lubarsch, after considering the statistics of the German hospitals for the years 1920 and 1921, as part of an investigation of the German Cancer Commission, concluded that the errors in diagnosis, even in this selected material, were so great that cancer statistics can have little value. Other pathologists, notably H. G. Wells,[1] have manifested equal skepticism.

Recently an extensive and unusually thorough analysis of the cancer mortality in the ten original registration states made by Schereschewsky[2] revealed the usual marked increase in the death rate from this disease during the period from 1900 to 1920. After making various allowances for the increased age curve and the increased precision and accuracy in the filling out of death returns, Schereschewsky concluded that there is an actual increase in the cancer mortality in persons over 40 years of age. An assorted lot of statisticians, clinicians and pathologists handling the same figures would probably reach varying conclusions. If there is such an actual increased tendency to a higher death rate from cancer, what is its significance? How much of it depends on decreased deaths from other causes in the upper age levels? How much on improved diagnosis? How much are any of the figures worth, anyway? Cerebral hemorrhage, diabetes, nephritis and heart disease show quite as marked an increase as cancer in the same age levels. Does this mean anything more than that all these diseases are being more readily recognized by the physician while not enjoying as great an improvement in death rate as some other diseases?

To add to the confusion, an analysis of European cancer statistics has led Peller[3] to the conclusion that the increased death rate from cancer is not real but only apparent. To avoid the recognized sources of error induced by improved registration and better diagnosis, he has used only the statistics during recent years of a few of the largest European cities. In Vienna, the number of cancer deaths is actually increasing only a little, but he finds there is such a marked decrease in deaths from other causes that the ratio of cancer deaths to other deaths shows a decided increase. Indeed, when the population of cancer age only is considered, the cancer death rate in Vienna in the period from 1919 to 1923 is actually lower than it was in the period from 1901 to 1905, and the same proportion is apparent for Paris. In London, since 1900, there has been an increased frequency of cancer only in the most advanced age periods; when the postwar period is compared with the prewar period there is little difference, cancer mortality being somewhat higher in old men, but slightly lower in women of all ages. Peller concludes that "the cancer mortality in some of the large cities of Europe gives no grounds for the often expressed opinion that cancer is in a general state of increase."

The figures for the cities of the United States are also considered to some extent, but they offer such wide variations, between Detroit with a cancer mortality rate of 64.4 and San Francisco with 152.6 in 1920, that they baffle analysis. They seem to suggest that there are marked differences in age distribution and in registration and medical efficiency in different parts of the country. It may not be undesirable to learn the impressions that a European physician holds concerning American medical conditions:

> American scientific medicine has shown in recent years a progress worthy of respect. In many fields of exact medical investigation, America is already leading. Likewise in the education of physicians, progress is discernible. We all know that not so long ago the level of the physicians who came over to us for instruction was not at all satisfactory. Even as America exhibits the greatest extremes in density of population and in cultural levels, so too the education of the medical students varies from school to school. This may in large measure explain the great variation in the cancer death rate in different cities. Corresponding to the extremely rapid development that is recognized in every respect in America, the earlier medical deficiencies will be quickly overcome, and what required many decades in Europe will there be attained

1. Wells, H. G.: Relation of Clinical to Necropsy Diagnosis in Cancer and Value of Existing Cancer Statistics, J. A. M. A. **80**: 737 (March 17) 1923.

2. Schereschewsky, J. W.: Cancer Mortality in the Ten Original Registration States, J. A. M. A. **85**: 1175 (Oct. 17) 1925.

3. Peller, Sigismund: Die Krebsfrequenz und die Frage der Krebszunahme, Ztschr. f. Krebsforsch. **22**: 316 (June 16) 1925.

much more quickly. Because of this the cancer figures in America must quickly increase. It is also not strange that in many places the cancer figures have reached such a height that we must believe them probably incorrect.

The number of recorded deaths from cancer in men is increasing much more rapidly than in women, so that there is now little difference in the two sexes in the most developed communities. This change is usually attributed to the larger proportion of internal cancers in men. Cancer of the skin, especially, shows little or no increase; in England and Wales the rate for males over 35 in 1868 was 45.7, and in 1909 it was 43.5. Cancer of the uterus and the breast also increases less rapidly than the less readily diagnosed internal cancers. For example, in England and Wales the rate for women over 35 years of age for cancer of the uterus, ovaries and breast in 1888 was 117; in 1909 it was 127, and in 1919 it was 121. Although there is generally a great increase in cancer of the alimentary canal, this has affected the stomach less than the esophagus.

Peller believes that the failure to answer the problem of the incidence of cancer does not lie in fundamental defects in the statistical method but on the defective working base. Defective diagnoses may be made by physicians, the statistical bureaus lack scientific medically trained leaders familiar with the problems of pathology and medicine, and the medical world in general shows but little interest in statistical work. At present, statistics can more easily propound problems than solve them, says Peller. Certainly, he concludes, we lack today adequate data to decide absolutely whether civilization and culture constitute cancer-predisposing or merely cancer-revealing influences.

THE METABOLISM IN OBESITY

"There is no stranger phenomenon than the maintenance of a constant body weight under marked variation in bodily activity and food consumption." [1] In these words, a capable student of metabolism recently referred to the vexing problems of overnutrition and obesity, in which the large amount of public interest is in marked contrast to the small amount of scientific information. Du Bois has pointed out that there are many persons who maintain constant weights during decades without any conscious limitation or increase in their dietaries. There are many others in this civilized land who maintain a constant weight only by frequent use of weighing machines and careful observations of the tightness of the waist-bands of skirts or trousers. We must remember, however, he adds, that obesity is rarest in those savage tribes among whom bathroom scales are unknown and skirts and trousers are at a minimum. It may be that the "constitutionally" obese person and the healthy underweight represent extremes of the same metabolic problem.

Students of obesity have long conjectured that obesity may result from causes other than excessive food intake or diminished energy expenditure. It has been assumed, for example, that the metabolism proceeds differently in those exhibiting the obesity "diathesis"—that they do not transform the nutrients in the accepted normal way. From this standpoint, obesity would be looked on as an anomaly or an abnormality of metabolism. So far as the basal metabolism is concerned, this conjecture does not apply. Sufficient actual determinations have been made on obese persons to furnish conclusive proof of the normality of this feature. Alterations in the basal exchange of matter and energy will not explain excessive overweight.[2]

Whether the metabolism of plethora, in contrast with the basal exchange, is altered has been debated. Some investigators believe that in endogenous obesity the organism works with abnormal economy, showing a much lower specific dynamic action than normal. Wang, Strouse and Saunders [3] asserted that protein shows a slight specific dynamic action in obese persons. Thin persons, on the contrary, show a high specific dynamic action of protein. Normal subjects follow much the same course as thin persons, but to a less degree. Normal subjects have the most marked specific dynamic action of carbohydrate. Although obese persons do not react in a uniform manner to carbohydrate intake, the average indicates a lessened specific dynamic action of carbohydrate. In their latest studies from the Nelson Morris Memorial Institute for Medical Research in Chicago, these clinicians [4] allege that after ingestion of protein, obese persons have a tendency to derive their energy from carbohydrate, whereas thin and normal persons use less carbohydrate than during starvation. Calories derived from fat decrease in the obese after the meal, but show little change in thin and normal persons. The two latter groups, however, show a decided rise in calories derived from protein after the meal, but the protein consumption is little affected in the obese. All of Strouse's subjects derived more energy from carbohydrate after the ingestion of a high carbohydrate meal, and less from fat. Calories derived from protein after this meal varied little, however, in any group from the starvation figures. After a high fat meal, all groups showed an increase in energy derived from fat. The obese continued to use carbohydrate in greater amounts than the two other groups. The protein consumption showed very little change, espe-

1. Du Bois, E. F.: Basal Metabolism in Health and Disease, Philadelphia, Lea and Febiger, 1924, Chapter X.

2. Strouse, Solomon; Wang, C. C., and Dye, M.: Studies on the Metabolism of Obesity, II, Basal Metabolism, Arch. Int. Med. **34**: 275 (Sept.) 1924.

3. Wang, C. C.; Strouse, Solomon; and Saunders, A. D.: Studies on the Metabolism of Obesity, III, The Specific Dynamic Action of Food, Arch. Int. Med. **34**: 573 (Oct.) 1924.

4. Wang, C. C.; Strouse, Solomon; and Saunders, A. D.: The Metabolism of Obesity, IV, The Distribution of Energy Production After Food, Arch. Int. Med. **36**: 397 (Sept.) 1925.

cially in obese and in normal persons. The fact that most of the obese persons studied showed a decided rise in calories derived from carbohydrate and a decrease in calories derived from fat after a high protein meal, and that the thin and normal subjects, on the other hand, utilized protein and fat as their chief sources of energy, is rather suggestive to the Chicago experimenters of a possible reason for obesity and thinness. As they express it, the obese conserve the body fat and thus accumulate more, whereas normal and thin persons use up their food fat instead of storing it.

TEMPERATURE AND BASAL METABOLISM

An abundance of evidence obtained through the accurate procedures of clinical calorimetry indicates that an increase in body temperature over the normal produces an increase in metabolism. Data derived from the study of fevers show that the average rise in heat production is about 13 per cent. for each degree Centigrade (7.2 per cent. for each degree Fahrenheit).[1] This is in harmony with the well known fact that chemical reactions are accelerated by increased temperatures of the medium in which they take place. In the instances of febrile disease already referred to, it is conceivable that chemical products such as bacterial toxins or derivatives of abnormal cellular reactions may be the stimuli immediately responsible for the acceleration of metabolism, so that the latter is merely an incidental accompaniment of the temperature changes rather than a more direct result of them.

The effects of high temperatures in the external environment of the body have not been so clearly ascertained. They are naturally modified by the ability of the body to adjust itself to a wide range in temperatures. There are, however, limitations to this capacity, and they depend in turn not alone on the external temperature per se, but also on the factors of relative humidity and air movement; in fact, the latter may be of predominating importance. Consequently, investigators at the Bureau of Mines [2] have developed the conception of what they term the "effective temperature index," which attempts to evaluate the influence of the three physical air factors represented by dry bulb temperature, wet bulb temperature and air velocity, and to express them by a single numerical value. Attention is called by McConnell and Yagloglou [2] to the large temperature range of successful operation of the body thermostatic control, within which heat production and heat loss are accurately balanced. The most economical range is represented by ordinary atmospheric conditions. Above 85 degrees effective temperature, however, there is apparently a stress on the mechanism. The body makes strenuous efforts to resist rise in its temperature by promoting evaporation of perspiration from its surface, but the limit of adjustment fails above 90 degrees effective temperature. This is indicated by the rapid increase both of heat production and of body temperature at the higher temperatures. At 105 degrees effective temperature, the heat production is twice as great as at the ordinary temperature of 65 degrees. A tendency for an increase in heat production is also shown below 65 degrees effective temperature, which heat is necessary to keep the body warm in cold surroundings.

The experiments of the Bureau of Mines investigators correspond well with those of previous students of the subject in showing that body temperature and pulse rate correlate fairly well with the rate of basal metabolism. The pulse rate increases approximately in direct proportion to the metabolic rate; therefore, the heart works just fast enough to supply the tissues with the extra oxygen needed. Benedict and Du Bois [3] have recently noted that there is an increase in oxygen consumption during sojourn in highly desiccated air, amounting to from 5 to 10 per cent. after from one to one and one-half hours in the hot environment. It is apparent, therefore, that some of our conceptions of metabolism under tropical conditions may require revision. From the standpoint of investigative technic in the clinical laboratory, it is important to note that there is a zone of minimum metabolic rate between 75 and 83 degrees effective temperature within which basal metabolism should be measured.

1. Du Bois, E. F.: Basal Metabolism in Health and Disease, Philadelphia, Lea and Febiger, 1924.
2. McConnell, W. J., and Yagloglou, C. P.: Basal Metabolism as Affected by Atmospheric Conditions, Arch. Int. Med. **36**: 382 (Sept.) 1925.
3. Benedict, C. G.; Benedict, F. G., and Du Bois, E. F.: Human Metabolism in an Environment of Heated Air, Proc. Nat. Acad. Sc. **11**: 371 (July) 1925.

Current Comment

EVALUATION OF PRESENT STATUS OF IODIN IN HYPERTHYROIDISM

The subject of hyperthyroidism has received so much attention in medical literature that recent contributors frequently begin their communications with apologies. Nevertheless, as argued by Hyman and Kessel,[4] "the pathogenesis of exophthalmic goiter is still open to question, and the therapeutic desideratum is still to be established." In their opinion the metabolic upset, characteristic of the disease, is merely superimposed on more basic sympathomimetic influences. Meanwhile, the argument for and against the use of iodin as a therapeutic and preventive agent continues Rienhoff [5] has recently presented histologic evidence that iodin produces an artificial remission, that the histologic picture changes from that of a hyperplastic to a colloid

4. Hyman, H. T., and Kessel, Leo: Exophthalmic Goiter (Graves' Syndrome) and Involuntary Nervous System, XII, Pathogenesis, J. A. M. A. **85**: 1017 (Oct. 3) 1925.
5. Rienhoff, W. F.: The Histological Changes Brought About in Cases of Exophthalmic Goiter by the Administration of Iodine; Bull. Johns Hopkins Hosp. **37**: 285 (Nov.) 1925.

state, and that the colloid state is the less active of the two. Furthermore, the correlation of the so-called goitrous areas of the world with areas that are iodin poor, has been shown many times. In the matter of prophylaxis, from Shropshire in England [6] and from Manitoba in Canada [7] comes the conviction that iodized table salt is a most practical preventive of hyperthyroidism. Wheatley advocates one part of potassium iodid to every 50,000 to 100,000 parts of salt. Still the favorable attitude toward iodin treatment and prophylaxis is not unanimous, and Jackson [8] asserts that hyperthyroidism may be merely temporarily disguised after long periods of treatment with iodin. The same author refers to his report of "eighteen cases of iodin hyperthyroidism induced by the indiscriminate use of iodin in adenomatous goiters." In view of these divergent views, Kimball's analysis in this issue of THE JOURNAL merits consideration for its tolerant evaluation of the uses and abuses of iodin.

THE HOSPITAL DIETARY—AN EXAMPLE OF RIGHT LIVING

The principles of public health have begun to loom larger and larger on the horizon of medical interest. They are no longer merely the concern of health officers or other special government officials; they must be dealt with in the everyday practice of the physician. The medical student of today is confronted not merely with the duty of ministering to the sick but also with the application of preventive medicine—of prophylaxis in its largest sense. More and more is this aspect of training for the prospective practitioner being introduced into the curriculum of the schools that prepare him for his life work.[9] The gospel of correct living, so far as man's bodily welfare is concerned, is destined to become an important theme for all medically trained persons: they must warn their followers against the potential menaces of the ordinary regimen and exhort them to choose the paths of hygienic rectitude. An equally urgent duty confronts the modern hospital, which has to provide for many on its staff who are not ill and for not a few patients whose ailments or injuries do not involve their nutritive welfare in any direct way. From this standpoint, Fitz and Lautz [10] of the Peter Bent Brigham Hospital in Boston, writing for the newly established *Journal of the American Dietetic Association*, remark that, in constructing normal diets, hospital dietitians must recognize common present-day dietetic errors and habits, and must remember that hospitals are becoming more and more centers of public health instruction for well and for sick persons. The most universal dietetic error, they believe, is the abuse of rich and concentrated foods in large quantities and irregularly. Such dietetic errors may result, at least, in obesity and chronic constipation. The public must be made to realize the possible dangers of obesity. Hospitals must set an example to their patients and personnel by serving model normal diets which are inexpensive, easily prepared, palatable and well cooked, which contain sufficient bulk, calories and protein to cover the ordinary metabolic and digestive needs, and which are so balanced in their food components as to be sound in theory and of practical usefulness. Another modern feature of institutional life consists in the prevention of "physical indolence" in the presence of current customs. As Haven Emerson has expressed it, if we would continue our appetites we must not abandon all exertion simply because opportunity of means and mechanical contrivance puts it in our power to do so.

6. Wheatley, James: The Prevention of Goiter, Medical Officer **34**: 161 (Oct. 10) 1925.
7. Hamilton, T. Glen; and McRae, D. F.: Some Studies on the Incidence of Goiter Among School Children in Manitoba, Canad. M. A. J. **15**: 1017 (Oct.) 1925.
8. Jackson, A. S.: Exophthalmic Goiter and the Involuntary Nervous System, Correspondence, J. A. M. A. **85**: 1660 (Nov. 21) 1925.
9. Winslow, C.-E. A.: The Place of Public Health in a University, Science **62**: 335 (Oct. 16) 1925.
10. Fitz, Reginald; and Lautz, Amalia: Certain Tendencies of Modern Hospital Dietaries for Normal People, J. Am. Dietetic A. **1**: 9 (June) 1925.

THE DIAGNOSTIC TESTS FOR SYPHILIS

The Wassermann test for the diagnosis of syphilis has become a routine procedure wherever clinical medicine receives modern recognition. The original method has been simplified and modified to produce an extremely reliable hemolytic diagnosis of an important disease. However, there is undeniably a large element of empiric direction in all of the proposed reactions. Accordingly, a competent reviewer [1] has not hesitated to remark that the strange vagaries of agglutination and Wassermann tests all show the inadequacy of our present knowledge, and how little we really know of intracellular chemistry. As various classic tests for abnormal components of the urine and various procedures for the quantitative analysis of blood, gastric contents and digestive secretions, spinal fluid, and other analyzable body components have given way to novel modifications or entirely new reactions, so we may expect the even less definite serodiagnostic tests to experience change with increasing knowledge. In the diagnosis for syphilis, the Kahn test,[2] in particular, seems to be gaining a deserved popularity. It eliminates the use of such variable factors as guinea-pig complement and sheep blood cells, and is in this respect less subject to error than the Wassermann test. The rapidity with which a complete test may be executed makes it particularly valuable in cases in which an early diagnosis is of immediate importance, as, for example, for blood transfusion or in the collection of convalescent scarlet fever serum. It is of interest, therefore, to learn that since October the laboratory of the Michigan Department of Health has ceased to run the Wassermann test on routine specimens for the diagnosis of syphilis, only the Kahn precipitation test being reported on.[3] Ample confirmatory evidence of the reliability of the latter has been secured through thousands of comparative tests. The Michigan commissioner of health states that there are several reasons for the change in procedure. They are both economic

1. Garrison, F. H.: An Introduction to the History of Medicine, Philadelphia, W. B. Saunders Company, 1922.
2. Kahn, R. L.: Serum Diagnosis of Syphilis by Precipitation, Baltimore, Williams & Wilkins Company, 1925.
3. Wassermann Test to be Replaced by Kahn Precipitation Test for Routine Specimens in the Laboratory of the Michigan Department of Health, J. Michigan M. Soc. **24**: 541 (Oct.) 1925.

and scientific. He avers that the simplicity and accuracy of the Kahn precipitation test in the hands of a well trained personnel make it a more dependable test than the Wassermann test, as ordinarily run by diagnostic laboratories. It is quickly carried out, so that far more prompt service on blood specimens can be secured. The results of the Kahn tests are interpreted in the same way as the Wassermann, since the method of reporting is based on a comparison of more than 160,000 parallel tests in the Lansing laboratory, and by many thousand reports made by contemporary investigators. The innovation in Michigan will be followed with interest by all interested in diagnostic service.

Association News

ANNUAL CONFERENCE ON MEDICAL EDUCATION, FEB. 15 AND 16, 1926

Preliminary Program

The next conference of the Council on Medical Education and Hospitals will be held at the Congress Hotel, Chicago, Feb. 15 and 16, 1926. The preliminary program follows:

MONDAY, FEBRUARY 15

Cooperation in Educational Progress. Dr. Charles R. Mann, director of the American Council on Education, Washington, D. C.

The University's Function in Medicine. Dr. Henry M. Tory, president of the University of Alberta, Edmonton, Alta.

The Program of Medical Education and Its Reactions. Dr. Albert B. Dinwiddie, president of Tulane University, New Orleans.

Problems in Medical Education. Dr. A. Stanley Mackenzie, president of Dalhousie University Faculty of Medicine, Halifax, N. S.

Hindrances to the University Action in Medical Education. (*a*) Dr. Walter A. Jessup, president of the State University of Iowa, Iowa City. (*b*) Dr. David Kinley, president of the University of Illinois, Urbana, Ill. Discussion opened by Dr. Samuel P. Capen, chancellor of the University of Buffalo.

TUESDAY, FEBRUARY 16

Experiments in Modifying the Medical Curriculum. Dr. Henry S. Houghton, director of the Peking Union Medical College, Peking, China.

Saving Time in Education. (*a*) In High School and College. Dr. Charles H. Judd, professor and head of the Department of Education, University of Chicago. (*b*) In the Medical School by Shorter Vacations, Quarter System, or other Methods. Dr. Ray Lyman Wilbur, president of Stanford University, Stanford University, Calif.

Graduate Medical Education. (*a*) The University Graduate Medical School. Dr. Guy Stanton Ford, dean of the University of Minnesota Graduate School, Minneapolis. (*b*) Postgraduate Assemblies. Dr. William B. Peck, secretary of the Post-Graduate Assembly of America.

The Importance of Research in Educational Institutions. Dr. John M. Dodson, Editor of *Hygeia*, Chicago.

An Internship as a Part of Medical Education. (*a*) Selection of a Hospital for Intern Training. Dr. Henry A. Christian, professor of medicine, Harvard Medical School, Boston. (*b*) Purpose of the Hospital Internship. Dr. Ernest K. Irons, dean of Rush Medical College, Chicago. Discussion by chairman of Fifth Year Committee.

On Wednesday, February 17, will come the annual meeting of the Federation of State Medical Boards of the United States, and on Thursday, February 18, will be held the annual meeting of the American Conference on Hospital Service. Programs of these meetings will appear later.

Essentials of Good Medical Practice.—According to all the known facts of pathology and the causes of disease, it is essential before making attempts to treat a patient that the practitioner of medicine should be able first of all to make a diagnosis, and recognize whether the patient is suffering from a disease or not, and, if not, he cannot be in a position to treat intelligently and look after a patient by any method. In addition, it is necessary that he must have a knowledge of the different therapeutic measures and materials which are used in the treatment of disease, so that each individual patient may be treated in the proper manner.—Waring, H. J.: *Brit. M. J.* **2**:682 (Oct. 17) 1925.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

License Revoked.—At the regular meeting of the State Board of Medical Examiners, Little Rock, November 10, the license of Dr. Robert F. Clay, Forrest City, was revoked, it is reported, on a charge of inebriation.

Request on "Parking" Denied.—The Union County Medical Society, Eldorado, recently appointed a committee which petitioned the city council to allow physicians special privileges in parking near their offices, especially in emergency cases. The council decided that no special privileges would be allowed. Attorney Joe K. Mahony has offered his services without charge to members of the society at any time a member is apprehended for violating the parking ordinances.——The society also appointed a committee to request a veterinarian in the community to discontinue using on his car the "authorized physicians' auto emblem."

FLORIDA

War on Eating Places.—Health officials are conducting a campaign to improve the sanitation of eating places in West Palm Beach. They put out of business, November 9, it is reported, four "hot dog" stands, closed one restaurant and two soda fountains, and arrested nine café owners. Those arrested will be tried, it is said, for violation of the sanitary code.

Personal.—Dr. Donald S. Fraser, recently with the International Health Board of the Rockefeller Foundation at Andalusia and Montgomery, Ala., has been appointed district health officer for West Florida with headquarters at Pensacola.——Dr. L. M. Coulter, recently of Yonkers, N. Y., has been appointed district health officer in District 3, with headquarters at Tampa.——Dr. W. A. Claxton, recently with the U. S. Veterans' Bureau Hospital, Oteen, N. C., has been appointed district health officer in District 2, with headquarters at Miami.——Dr. Charles William Bartlett, Jr., has been appointed city physician of Tampa to succeed Dr. John A. Barnes, on recommendation of Dr. Ernest C. Levy, health officer.

GEORGIA

Personal.—Dr. Silas C. Rutland, La Grange, has been appointed head of the Troup County Board of Health to succeed Dr. Carp S. Kinzer, resigned.——Mr. Conrad Kinyoun, asistant bacteriologist in the Hygenic Laboratory, U. S. Public Health Service, has been appointed director of the Public Health Laboratories of Savannah.

ILLINOIS

Health Officer Appointed.—Dr. Thomas W. Rhodes, Cleveland, has accepted the position of health officer of the Quincy public health district, according to the Quincy *Whig-Journal*. Dr. Rhodes was formerly connected with the New York State Department of Health, was health officer at East Liverpool, Ohio, served in the World War and later was on duty at the Marine Hospital, Cleveland.

"Pan-Organic" Specialist Arrested.—Dr. Edwin V. Heaton, Danville, September 9, entered a plea of guilty on a charge of violation of the Harrison Narcotic Act and, it is reported, was sentenced to serve a term of six months in Vermilion County jail and to pay a fine of $200, and was paroled to Clint Tilton of Danville, Ill., for a period of one year. Dr. Heaton formerly is said to have advertised in the Battle Creek (Mich.) *Inquirer*, boosting "twilight sleep" and to have styled himself as examining physician for the "Pan-Organic Specialists."

Personal.—Dr. Anna H. McFarland Sharpe, formerly of Jacksonville, has been appointed physician to the College of Women, Tallahassee, Fla.——Dr. George C. Skinner has been named medical supervisor by the Veterans' Bureau, with headquarters in Washington. Dr. Skinner will establish contact with field officers of the Veterans' Bureau in the Middle West in an effort to standardize the medical administration.——Dr. Arlington Ailes, formerly health officer of

Shelby County, Ohio, has been appointed full-time officer for LaSalle, Oglesby and Peru, to succeed Dr. Edmund W. Weis.

Report on Venereal Disease.—There were fourteen counties in Illinois with a population of about 300,000 in which no case of syphilis was reported in the last fiscal year, and ten counties with about 300,000 population from which no case of gonorrhea was reported, and there were less than 1,000 of the 5,000 physicians in the state outside Chicago who reported any cases of venereal disease; yet, according to the state department of health, there were 31,254 cases of venereal disease reported in the year, of which 10,981 were syphilis and of these 8,457 were from Chicago. The case reports are probably far from complete. The total number reported last year averages about 100 cases daily.

Chicago

Personal.—Dr. Arno B. Luckhardt, professor of physiology, University of Chicago, addressed the International Acetylene Association at the Congress Hotel, November 19.——Dr. Max L. Folk has been appointed associate in ophthalmology at the Michael Reese Hospital.

Society News.—Members of the Chicago Medical Society gave a dinner, November 18, in honor of Dr. Oswald E. Denney, chief medical officer, U. S. Public Health Service, National Leprosarium, Carville, La., who addressed a joint meeting of the society with the Chicago Tuberculosis Society that evening.——Dr. Maurice L. Blatt addressed the Physicians' Fellowship Club, Logan Square Masonic Temple, November 20, on "Physical Examination of Infants and Young Children."——The second Ludvig Hektoen lecture of the Billings Foundation was given, November 27, before the Institute of Medicine of Chicago by Dr. Edward Francis, director, Hygienic Laboratory, U. S. Public Health Service, Washington, D. C., whose subject was "Tularemia." The sixth Pasteur lecture of the Institute of Medicine has been postponed until January. Preceding the tenth annual meeting at the City Club, December 1, 7:30, the institute will entertain the fellows at a dinner.

University News.—The National Research Council has granted the University of Chicago $10,300 for the support of work on the biology of sex under Prof. Frank R. Lillie, Ph.D., and Assistant Prof. Carl R. Moore, Ph.D.——The National Tuberculosis Association has granted the university $3,000 for the continuation of the study of the "Nutrition of the Tubercle Bacillus," by Dr. Esmond R. Long.——The Carnegie Corporation, through the American Association of Museums, has granted the university $2,500 for the investigation of "Museum Fatigue," by Associate Prof. Edward S. Robinson, Ph.D., of the department of psychology.——Dr. Ludvig Hektoen, head of the department of pathology, University of Chicago, since 1901, Prof. Albert A. Michelson, Ph.D., head of the department of physics since the founding of the university, and Dean Albion W. Small, Ph.D., head of the department of sociology and anthropology since 1892, are resigning as executive heads of their departments, and their places will be taken by Dr. H. Gideon Wells, Prof. Henry G. Gale, Ph.D., and Prof. Ellsworth Faris, Ph.D.

INDIANA

Sanitation in Tomato Canneries.—The *Bulletin of the Indiana State Board of Health* reports the inspection of 165 tomato canneries in the state, with the assistance of Burton J. Howard, U. S. Bureau of Chemistry, Washington, D. C.; William J. McCarthy and William T. Ford of the Cincinnati Branch U. S. Bureau of Chemistry, and the Indiana State Food and Drug Department. Three canneries were rated bad; twenty were rated poor, ninety-two fair and fifty good. Many tons of tomatoes were destroyed voluntarily by the packers to prevent spoilage because of an oversupply. The inspectors condemned a carload of tomatoes at Vincennes, about 14 tons at Orestes and about 6 tons at Alexandria. Three hundred and thirty-eight samples of catsup, chili sauce, paste and tomato pulp from ninety companies were examined by chemists for mold, which eighty samples contained in excess. Many recommendations made by the inspectors were accepted by the manufacturers, and other recommendations involving extensive changes will be put into effect before the next season.

MARYLAND

Survey of Health Conditions in Baltimore.—Under the direction of Dr. Valcoulon L. Ellicott, epidemiologist, health officials are completing a survey of Baltimore which is expected to be of great service. The plan, which is in use in other large cities, is to divide the city into "health units" according to variations in the types of the population, and a study of each division is now being made by the department. The general death rate, the infant mortality figures and the tuberculosis death rate will be recorded on a map; in areas where the tuberculosis death rate is high, additional tuberculosis clinics will be established, as will additional baby clinics in areas where the infant mortality is high. A high general death rate in an area will be the signal for the immediate concentration of health forces.

MASSACHUSETTS

The Lowest Diphtheria Record.—Not since 1861, when statistics on mortality in Boston were first available, has the number of deaths from diphtheria been so low as during the present year, and not since 1871, when diphtheria cases were first reported in that city, has the number of cases been so low. There were seventy-eight deaths in Boston this year up to November 1, and 1,073 cases reported. In some former years (even with a much smaller population) deaths from diphtheria amounted to 878. The average annual number of deaths for the last six years has been 150, and at times more than 5,000 cases were reported in the city in one year. It is evident, says the Boston Health Department, that the diphtheria situation this autumn is most exceptional and there is no reason to believe that the total figures for the year will be materially changed when reports for November and December are included.

MINNESOTA

Society News.—The annual memorial meeting of the Hennepin County Medical Society, held November 18, was addressed by Rev. Thomas E. Cullen, president of St. Thomas' College. Six members of the society died within the last year.

Personal.—Dr. John F. Norris has been appointed superintendent of the St. Peter State Hospital.——Dr. Otis W. Britt is managing the Southwestern Sanatorium at Worthington during the absence of the superintendent, Dr. Sidney A. Slater, who is expected to return about January 1.

MISSOURI

County Health Department Discontinued.—The county court at Albany recently decided to discontinue the county health department which has been maintained for the last three years, in view of a shortage of funds due to necessary expenditures in other departments. Dr. Thomas E. Graham was employed by the court as county physician.

Personal.—Dr. Elbert J. Lee, Jr., has been appointed head of the City Sanitarium, St. Louis.——Dr. William W. Graves, director and professor of the department of neurology and psychiatry, St. Louis University School of Medicine, St. Louis, has returned from Scotland where he delivered the Henderson Lecture at the University of Edinburgh, October 16. Dr. Graves also gave addresses at University College, London; University of Aberdeen; Queen's College, Belfast and before scientific societies in Glasgow and Dublin.——Dr. Clarence M. Grace, for nine years physician to the State Industrial Home for Girls, Chillicothe, has retired from that position, according to the Chillicothe *Tribune*.

Society News.—The Jackson County Medical Society, November 17, held a symposium on syphilis, in which Dr. George Wilse Robertson discussed "Tryparsamide, Malarial and Swift-Ellis Treatment of Paresis"; Dr. Richard L. Sutton, "Relative Value of the Modern and Old Methods in the Treatment of Early Syphilis," and Dr. Edward J. Curran, "Manifestations of Syphilis of the Eye." November 24, the society conducted a symposium on cardiac disease, in which Dr. Logan Clendening spoke on the "Modern Conception of Cardiac Failure and Its Therapeutics"; Dr. Henry P. Boughnou, "The Electrocardiograph and Its Aid in the Treatment of Heart Disease," and Joseph E. Welker, "Pericarditis."——The St. Louis Medical Society, November 6, constituted itself a nominating committee and unanimously presented Dr. Amand N. Ravold for president, Drs. Charles A. Vosburgh, Floyd Stewart and Christian F. Pfingsten, vice presidents, and Dr. Edwin C. Funsch, secretary.——Dr. Karl A. Menninger, Topeka, Kan., addressed the St. Louis Medical Society, October 27, on "Fundamentalism and Modernism of Psychiatry."

The Adcox Confession (Continued).—Dr. Robert Adcox says in his confession in the St. Louis *Star* that Frank J. Kenney studied while serving in a Massachusetts jail how to continue

his career without interference from the law and that he bought a ticket for St. Louis on the day he was released. Kenney had sold a medical diploma to one Abraham J. Friedman of Boston, who, in attempting to get by the Massachusetts state board, was found out, with the result that Kenney was indicted and jailed. Kenney organized, says Adcox, the Eastern University School of Medicine, Baltimore, and the Maryland University of Medicine and Surgery, neither of which ever existed in fact, their total equipment consisting of fancy diplomas, credential certificates, attendance cards and "great seals." Adcox and Kenney arranged a schedule of prices for credentials, the complete set to cost $250. While Samuel Kapland and Adcox were partners in a manufacturing business under the name of the Bio-Chemical Company, Kaplan secured a diploma from the St. Louis College of Physicians and Surgeons which cost him $500. He took a correspondence course in medicine later offered by some institution in Washington; then he took an examination before the Missouri state board and failed. Kaplan has been indicted in Washington in connection with diploma mill frauds. About this time, Adcox learned that students were being enrolled at the St. Louis College of Physicians and Surgeons without his assistance and that their credentials were supposed to have been issued by Dr. Frank P. Young of the Pacific Medical College. Adcox went to California to meet Dr. Young, with whom he says he arranged to obtain credentials and diplomas for a certain price. He says also that hundreds of these diplomas were sold to chiropractors, osteopaths and other drugless healers, and that there are now in the United States some 3,000 or 4,000 persons who have in this manner graduated from the Pacific Medical College, which institution never had a graduating class. Educational credentials of every kind were now available to Adcox in many states. He was able to obtain "real honest-to-goodness" high school diplomas from a number of high school principals and professors which no board of medical examiners would question. He had on his list educational officials in Illinois, Pennsylvania, Indiana, Washington, Kansas, Missouri and the District of Columbia. The low grade medical colleges now had capacity enrolments, quack schools were being opened, and "drugless healers appeared in countless droves." Adcox' next move was a trip to San Francisco to get in touch with a Rev. D. Cutting of the "First Spiritual Church of the City of San Francisco."

NEW JERSEY

Personal.—Dr. William A. Clark tendered his resignation, October 27, as a member of the staff of the State Hospital, Trenton, in order to resume private practice.

Chiropractors and Others Fined.—The New Jersey State Board of Medical Examiners reports the following legal action taken recently against certain chiropractors, druggists and others:

Lester Klein, William J. Sweeney, Alfred C. Davis and John Kugel, Newark; Walter H. Stansbury, Freehold; Francis A. Curtis, Asbury Park, and John Miller, Paulsboro, chiropractors, were tried on charges of practicing medicine without a license, and judgment was entered in each case for the penalty and costs.

Philip Pabst, Arlington; Cecil G. and Robert Williams, Hackensack; Romeo Nastasia, Long Branch; Harold E. Welsh, Cape May; Robert Welsh, Wildwood, chiropractors, each pleaded guilty to charges of practicing medicine without a license and paid the penalty and costs.

John H. Conover, Union Hill, a chiropractor who was tried on a third charge of practicing without a license, refused to pay the fine and was committed to jail for 100 days. Wendall H. Cronk, Vineland, a chiropractor, refused to pay the fine for the same violation and was sent to jail for ten days.

Alexander Livingstone, Pensgrove, and Giociato Cusa, Asbury Park, druggists, were tried on charges of violating the medical practice act. Livingstone paid the penalty and costs; judgment was reserved in the case of Cusa.

Hannah Olson, Ocean Grove, and Jennie Coulter, Wildwood, were tried for violation of the medical practice act. Judgment was entered for the penalty and costs. Kathryn Quinn, Ocean City, paid the penalty and costs for practicing without a license.

NEW YORK

Hospital News.—Plans are being completed for a million dollar hospital and medical school at the Albany City Hospital, Albany.——The Harlem Valley State Hospital, Wingdale, has awarded contracts for the construction of a $2,900,000 building.——The Coney Island Hospital Alumni Association, Brooklyn, has elected Dr. Moses A. Bluestone, president; Dr. Samuel E. Last, vice president, and Dr. Louis Klein, secretary.

Goiter Prevention at Syracuse.—The medical examination of 25,799 school children in 1923 showed that 4,152 had enlargement of the thyroid gland. Notices were then sent to parents recommending that the family physician be consulted and asking, where this recommendation was not followed, for permission to administer iodin tablets under the direction of the school physician. A year later the students under treatment for goiter were reexamined, and of these there remained in school 2,358, of whom more than 600 were found to need no further treatment. During the school year 1924-1925, there were 1,639 of the original number taking the iodin tablets, and on reexamination many of these were able to discontinue treatments. The schedule of treatments will be resumed by the school authorities this year after reexamination, but the treatment of high school pupils will be discontinued, as it is felt that they are able for the most part to go to their family physician.

New York City

Report of United Hospital Fund.—This organization aids its fifty-six member hospitals to meet their financial needs through joint planning and common services; its predecessor —the Hospital Saturday and Sunday Association—first went to the charitable public of New York with an appeal for funds fifty-six years ago, and the collection made then amounted to $26,000. Since 1879, the United Hospital Fund has collected more than $7,000,000. In the last annual report the president said that in 1919-1920, the fund turned its collection over to fifty-six hospitals with an aggregate of 3,010,699 hospital days, of which 1,431,677 were given free. Recently the distributing committee turned over to the fifty-six members of the fund $500,000 for aid to the poor. The next annual appeal to the public for funds began, November 23, and it is hoped and expected that contributions this year will amount to $1,000,000. To be a member of the fund, a hospital must be incorporated and have maintained a minimum of thirty-five beds for three years or more and have given a minimum of 5,000 days of free service a year in the same period. Hospitals falling below these standards lose their membership in the fund. There is a board of forty trustees, who are chosen from the fifty-seven representatives of the member hospitals and from the forty-eight members at large and ex-officio members representing the general public. The general director, appointed eight months ago, is Minott A. Osborn, and the president, Mr. Henry J. Fisher, who has been a trustee since 1915. The United Hospital Fund now has an endowment of $551,674.66.

NORTH CAROLINA

Personal.—Dr. Clyde E. Cotton, Asheville, has been elected president of the Rotary Club of that city.——Dr. Edward P. Odend'hal, chief medical officer at the U. S. Veterans' Hospital, Oteen, has been promoted from lieutenant-colonel to colonel.——Dr. George C. Jones, for the last eighteen months on duty at the federal hospital, Oteen, has resigned and will devote his attention to real estate in Asheville.

Society News.—The Ninth District Medical Society, Lexington, adopted a resolution commending the state board of medical examiners for revoking the licenses of several physicians recently convicted in court for violations of the Harrison Narcotic Law. Officers elected for the ensuing year are Dr. Jarvis R. Terry, Lexington, president; Dr. Andrew Baxter Byerly, Cooleemee, vice president, and Dr. James W. Davis, Statesville, secretary (reelected).——Dr. William deB. MacNider, president of the State Medical Society, was guest of honor at the annual meeting of the Second District Medical Society, Washington, November 13.—Dr. Claiborne T. Smith, Rocky Mount, was elected president of the Fourth District Medical Society, November 10; Dr. Spencer P. Bass, Tarboro, vice president, and Dr. George M. Brooks, Elm City, secretary-treasurer. The next meeting of the society will be in Wilson.—Members of the Sampson County Medical Society have initiated a move to secure a county hospital for Sampson County with a view to securing aid in its maintenance from the Duke Foundation on a basis of one dollar a day for each occupied free bed.——Dr. Clarence A. Mills, University of Cincinnati College of Medicine, addressed the Buncombe County Medical Society, Asheville, November 17, on "Hemorrhage: Its Pathology and Treatment."

OHIO

Committee to Inspect Penitentiary.—Following the report of the prison physician that fifteen prisoners had died of tuberculosis in the last year compared with only eighteen from all other causes, and that about fifty other prisoners

had tuberculosis, the governor has appointed a board to survey health conditions in the state penitentiary, Columbus. The members appointed were Drs. Charles O. Probst, Charles S. Hamilton, Dora V. Burkett, William P. Smith, Isaac B. Harris, Sterling B. Taylor, Harry R. Burbacher and Andre Crotti.

Diphtheria in Cleveland.—The *Bulletin* of the Academy of Medicine of Cleveland tabulates the amount of diphtheria in that city in the last thirteen years. There were 2,605 cases reported in 1912, and 1,100 in 1924, with a mortality per hundred thousand of 27.2 and 8.7, respectively, and a morbidity rate of 426 and 120. There has not been much reduction in the case fatality rate, which was 6.4 in 1912 and 7.2 in 1924, with very little change in intervening years. The chief of the bureau of child hygiene of the Cleveland Health Department considers that the reduction in morbidity and mortality since 1921 has been due to immunization, to reduction in contacts with cases and carriers and to better control of contacts. The almost stationary case mortality rate indicates that there has been no improvement in the care of the individual case since 1912; seventy-nine persons died of diphtheria in Cleveland in 1924.

Personal.—Dr. William E. Brown has been appointed assistant professor of preventive medicine at the University of Cincinnati College of Medicine, Cincinnati. Dr. Brown is a graduate of Harvard University Medical School, Boston, and has a C.P.H. from the Harvard-Technology School of Public Health.——Dr. William B. Wherry, professor and head of the department of bacteriology and hygiene, University of Cincinnati College of Medicine, has been appointed a member of the board of health of that city to succeed the late Dr. Edward W. Walker. Dr. Wherry formerly was an officer in the U. S. Public Health Service, and according to the secretary of the faculty, University of Cincinnati College of Medicine, served in the Orient, and during the last outbreak of bubonic plague in San Francisco discovered plague among the ground squirrels in California.——Dr. Lewis P. Jackson, Van Wert, who was charged in common pleas court with performing an illegal operation, was found not guilty, November 7.——Dr. William C. Martin has been elected mayor of Monroeville.——Dr. Louis A. Witzeman has presented the City Hospital, Akron, with a new operating table. The Community Chest has allowed the City Hospital in its budget for the year 1926, $40,000.

PENNSYLVANIA

License Restored.—It is reported that the license of Dr. James P. Kirk, which was suspended, Dec. 10, 1924, was restored, August 21. THE JOURNAL noted in the news, Oct. 11, 1924, that Dr. Kirk was being held in the Erie County jail, awaiting transfer to the penitentiary at Atlanta, Ga., for violation of the Harrison Narcotic Law. He was sentenced to one year and a day.

Editor Appointed.—The trustees of the State Medical Society of Pennsylvania announce the appointment of Dr. Frank C. Hammond, Philadelphia, as editor of the *Atlantic Medical Journal*. Dr. Hammond, who is clinical professor of gynecology and dean of Temple University Department of Medicine, Philadelphia, has for many years been a member of the publication committee.

Health Play Contest.—A health play contest for the school year 1925-1926 has been arranged by the National Tuberculosis Association. The contest is open to junior and senior high schools. Plays must deal with individual or community health or hygiene, and prizes ranging from $10 to $100 will be paid to the winning school. Plays from Pennsylvania schools should be submitted to the Pennsylvania Tuberculosis Society. The national judges are Dr. James Mace Andres, Ph.D.; Hughes Mearns, and Dr. Charles E. A. Winslow, of Yale University. A manual on the contest and play writing can be secured from the Pennsylvania Tuberculosis Society.

New Registration Law.—The new annual registration law requires all persons now engaged in the practice of the healing art, and all who are hereafter licensed, to register annually with the board of medical education and licensure of the department of public instruction before the second day of January, and to pay a fee of $1 for the registration. Forms are being issued to all practitioners, that they may comply with the act of the assembly. The penalty for failure to register is a fine of from $10 to $100 on conviction, or, in case of nonpayment, not exceeding ten days in the county jail. The money received from annual registrations shall be available for the use of medical education and licensure for the purpose of enforcing the law against illegal and nonregistered practitioners.

Free Graduate Lectures.—The University of Pennsylvania Graduate School of Medicine gave a series of lectures to physicians without fee or registration. Dr. George E. Pfahler, professor of radiology, discussed "Electrocoagulation and Radiation in Benign Skin Lesions," November 9; Dr. Edgar N. Cowan, assistant professor of biochemistry, "Clinical Hemochemistry," November 10; Dr. John A. Kolmer, professor of pathology and bacteriology, "The Nature and Pathogenesis of Bacterial Toxins," November 11; Dr. Edward Lodholz, Isaac Ott professor of physiology, "Instinctive Reacting Systems and Their Physiologic Characteristics," November 12; Drs. Edward B. Krumbhaar, Elmer V. Eyman and others gave a conference on "Interesting Autopsies," November 13, and Dr. James Harold Austin, department of research medicine, "Chemistry in the Treatment of Disease," November 14.

Personal.—Dr. George E. de Schweinitz, formerly President of the American Medical Association and a trustee of the University of Pennsylvania, addressed the Warren County Medical Society, Warren, November 9, and was guest of honor at a dinner given by the University of Pennsylvania Alumni.——Dr. Edmund Roger Samuel, Mount Carmel, was elected president of the Northumberland County Health Association, November 10, and Dr. Robert B. McCay, Sunbury, secretary-treasurer. Among those present at the meeting from the state board of health were Dr. Charles H. Miner, Harrisburg, commissioner, and Dr. Edgar S. Everhart.——At the fiftieth meeting of the Pennsylvania Association of Directors of the Poor, Lancaster, October 20-22, Prof. Carl Kelsey, Ph.D., University of Pennsylvania, spoke on "A Half Century of Poor Relief—a Brief Contrast of Changed Conditions."——Dr. Arthur P. Keegan has been appointed coroner's physician of Philadelphia County to succeed Dr. Richard D. Burke.

Philadelphia

Personal.—Dr. Francis C. Grant, instructor in surgery in the Graduate School of Medicine, University of Pennsylvania, has been granted leave of absence until June, 1926, to do special work in the Brighton Hospital, Boston.

Society News.—Dr. Samuel J. Crowe, Johns Hopkins University School of Medicine, Baltimore, addressed the Section on Otology and Laryngology of the College of Physicians, November 18, on "Clinical and Pathological Studies of the Ear."——Dr. Charles R. Stockard, professor of anatomy, Cornell University Medical College, New York, addressed the second annual open meeting of the Biochemical Society of Jefferson Medical College, November 17, on "Recent Advances in the Study of Internal Secretions."——Dr. Arthur C. Morgan recently addressed the Northern Medical Association of Philadelphia at the Majestic Hotel on "Prognosis of Certain Respiratory Diseases," and Dr. Joseph Sailer on "Prognosis of Heart Disease," (lantern slides).——The free lecture for the public at the University of Pennsylvania, November 21, was given by Dr. Henry F. Smyth of the School of Hygiene and Public Health, on "Poisonous Gases in the Industries."—Dr. A. B. Vastine, D.D.S., of the George F. Geisinger Memorial Hospital, Danville, addressed the Academy of Stomatology at the College of Physicians, 19 South Twenty-Second Street, November 24, on "Radicular Cysts, Their Recognition, Significance and Surgery."——Dr. William Allen Pusey, formerly President of the American Medical Association, will address the Philadelphia County Medical Society, December 9, on "Medical Education."

SOUTH CAROLINA

Unit to Study Hygiene of Cotton Mills.—The U. S. Public Health Service will establish in Greenville about December 1, according to the Greenville *News*, a unit comprising a staff of physicians, nurses, clerks, stenographers and others, to make an extended study in that area of industrial hygiene and sanitation in relation to the cotton mills. A representative of the Public Health Service recently acquainted the community with the object of the unit. Four other units in various sections of the country have been established to investigate health conditions in other industries, one in the coal fields of Pennsylvania, another in the cement works at Hagerstown, Md., a third in the silver plating industry near Baltimore, and a fourth in the granite mines of Vermont. The Greenville unit will be the first in the textile industry. The study will cover a period, it is said, of at least two years.

TENNESSEE

Society News.—Dr. William O. Floyd, Nashville, addressed the Tri-County Medical Society at Huntington, recently, on "Surgical Care of Organic Lesions of the Stomach," illustrated with lantern slides. Dr. William O. Taylor was elected president to succeed Dr. Virgil E. Massey; Dr. Richard M. Little, Martin, was reelected secretary; Dr. Harry L. Alexander, McKenzie, was elected vice president for Carroll County; Dr. Edward A. Travis, Como, vice president for Henry County; Dr. James M. Smyth, Camden, vice president for Benton County, and Dr. Basil S. Mayo, Dresden, vice president for Weakley County.

TEXAS

Decrease in Malaria.—The state board of health reports that malaria in the last five years has decreased from 49,256 cases in 1921 to 9,299 cases in the first nine months of 1925, and that deaths from malaria decreased from 523 in 1921 to 102 in the first six months of 1925. Control work in Texas for the year ending September 30 afforded protection against malaria to more than 900,000 citizens in urban districts at about 6 cents per person; work in rural districts was carried on only in counties having full-time health units; the state board of health assisted in securing the drainage of about 14,000 acres of land and in educational work—fifty lectures on mosquito control, forty news items, the exhibition of mosquito films and the distribution of about 20,000 placards and other mosquito control literature. Mosquito control work against yellow fever was carried on along the Mexican border by the U. S. Public Health Service, with the cooperation of the state board of health and the communities concerned.

VERMONT

James E. Hair Fined.—Dr. James E. Hair, late secretary of the Eclectic Medical Examining Board of Connecticut, was recently fined $50 and costs for practicing medicine in Vermont without a license. Hair, so far as our records show, is not a graduate of any reputable medical college. He does, apparently, hold a diploma from the notorious diploma mill Kansas City College of Medicine and Surgery. He was long connected with the Connecticut Eclectic Examining Board, which became notorious by licensing scores of fake doctors whose licenses were later revoked by the Connecticut Department of Public Health, while the examining board, of which Hair was secretary, was put out of business.

VIRGINIA

Fund for Organizing County Societies.—At the last annual meeting of the Medical Society of Virginia, the house of delegates voted to appropriate $1,000, or as much thereof as is necessary, to be expended by the secretary for the organization and reorganization of county medical societies. The councilors of the respective districts are to visit the field with the secretary when necessary.

Society News.—Dr. Wendell C. Phillips, New York, president-elect of the American Medical Association, addressed the house of delegates of the Medical Society of Virginia, October 15, at the annual meeting in Richmond, on "The Achievements of the American Medical Association."——Dr. Alfred P. Jones has been elected president of the Roanoke Academy of Medicine, Roanoke; Dr. Marcellus A. Johnson, Jr., and Hugh J. Hagan, vice presidents, and Dr. Paul Jones, secretary.

Personal.—Dr. Manfred Call, Richmond, won the Roanoke Academy of Medicine cup in the golf tournament held at the recent meeting of the Medical Society of Virginia, Richmond. Dr. Call has also been reelected for the fourth consecutive year dean of the School of Medicine of the Medical College of Virginia, Richmond.——Dr. Ernest H. Alderman has been appointed first assistant physician at the Eastern State Hospital, Williamsburg, succeeding Dr. Baxter I. Bell, who has entered private practice.——Dr. Charles H. Moncure has been elected health officer of Orange.

WASHINGTON

Proposed Basic Science Bill.—The Public Health League was instrumental in introducing a bill in the last legislature which would prescribe the educational qualifications of applicants for licenses to practice the healing art. It proposed a committee of five members of the faculty of the University of Washington learned in the sciences of anatomy, physiology, chemistry, pathology and hygiene, to conduct examinations of applicants to practice, to be appointed by the president of the university. A person desiring a license to practice any healing art would first apply for examination before this committee and pay a fee of $10, provided the applicant proved to the committee that he had at least two years of college training, including instruction in the sciences enumerated. If the applicant passed with an average of not less than 75 per cent., the committee would issue him a certificate to be filed with the state treasury, together with his application and fee required by law to take the examination for a license to practice. Since the last legislature closed its session early, the Public Health League plans to introduce a similar bill when the legislature reconvenes.

WEST VIRGINIA

Society News.—Dr. Max Kahn, Baltimore, addressed the Barbour-Randolph-Tucker County Medical Society, October 15, at Elkins, on "Bone Tumors"; the society recently secured at its own expense the film "Play Safe," for the public school auditorium.

Personal.—Dr. Quintard Taylor, medical director at White Sulphur Springs, has resigned to go to Garden City, Long Island.——Dr. Robert J. Wilkinson, Huntington, has been elected president of the Chesapeake and Ohio Railway Surgeons Association. The association will meet again next year at White Sulphur Springs.

WISCONSIN

Hospital News.—The board of trustees of the Milwaukee County Dispensary has recommended that the position of dispensary chief be abolished and that the position of a part-time clinical director be created. The county civil service commission recently held an examination for the position of dispensary chief; none of those who applied for the position were able to qualify.

Society News.—Hon. Walter D. Corrigan, Milwaukee, addressed a joint meeting of the Kenosha County Medical Society and the Kenosha Dental Fraternity at St. Catherine's Hospital, October 6, on "The Defense of Aaron Burr."——Dr. Charles A. Elliott, professor of internal medicine, Northwestern University Medical School, Chicago, addressed the Outagamie County Medical Society, October 20, on "Goiter," and conducted a clinic at St. Elizabeth's Hospital.——Dr. Roland S. Cron, Milwaukee, addressed the Racine County Medical Society at St. Mary's Hospital, Racine, October 22, on "The Prevention and Relief of Prolapsus Uteri."——Prof. Geza de Takats, Budapest, addressed the Milwaukee Oto-Ophthalmic Society, November 19, on "Prolongation of Local Anesthesia, Experimental and Clinical Research" (lantern slides).

PANAMA CANAL ZONE

Society News.—The two hundred and twenty-sixth meeting of the Panama Canal Zone Medical Association was held at the Santo Tomas Hospital, October 20, under the presidency of Dr. Charles R. Mueller, Jr., and with seventy-six members in attendance. Dr. Edgar W. Davis spoke on "The Use of Mercurochrome in Santo Tomas Hospital." Cases of beriberi and gas gangrene were presented.

CANADA

Society News.—Dr. W. Blair Bell, professor of obstetrics and gynecology, University of Liverpool, England, addressed a closed session of the Toronto Academy of Medicine, Toronto, November 10, at which time he submitted a report on his research on cancer.

Personal.—Dr. David A. Stewart, Ninette, Manit., has been elected president of the Manitoba Medical Association.——Dr. Walter C. Chipman, professor of gynecology and obstetrics, McGill University Faculty of Medicine, Montreal, was elected president-elect of the American College of Surgeons at the annual meeting at Philadelphia, October 29.

GENERAL

News of Epidemics.—Restrictions on public meetings and on attendance in the public schools, established in Louisville, Ky., October 22, on account of an outbreak of infantile paralysis, were removed, November 2, following a conference of the board of public safety with the health authorities. From September 11 to November 10 there had been forty-six cases and four deaths.——The board of health of Carrollton, Ky., recently closed the graded schools on account of an outbreak of diphtheria, which was the first time in fifteen years

that the city schools had been closed by an epidemic except that of influenza in 1918.——The public school of Oswego, Ill., recently closed on account of an outbreak of diphtheria, more than twenty cases being reported.——The ban in Bloomington, Ill., on public meetings due to an outbreak of smallpox, was lifted, November 6.

Society News.—The Eastern Section of the American Sanatorium Association elected at its annual meeting, November 13, at the New Jersey Sanatorium for Tuberculous Diseases, Glen Gardner, and at the Essex Mountain Sanatorium, Verona, Dr. Frederick H. C. Heise, Trudeau Sanatorium, Trudeau, N. Y, president; Dr. Hugh B. Campbell, medical director, Norwich State Tuberculosis Sanatorium, Connecticut, vice president, and Dr. Ernest B. Emerson, medical director, Massachusetts State Tuberculosis Sanatorium, Rutland, Mass., secretary-treasurer. Among others, Dr. Eugene L. Opie, Philadelphia, spoke on "Latent Tuberculous Infection and Its Relation to Pulmonary Tuberculosis," and Dr. Edgar Mayer, Saranac Lake, on "Physics and Therapeutics of Light, with a Plea for Its More Extensive Use." ——Dr. Willard Smith, Phoenix, Ariz., was elected president of the Medical and Surgical Association of the Southwest at the recent eleventh annual meeting in El Paso; Drs. Willis W. Waite, El Paso, and Le Roy S. Peters, Albuquerque, N. M., vice presidents, and Dr. William Warner Watkins, Phoenix, secretary-treasurer.

Awards of Medical Women's National Association.—This association started a scholarship fund at its meeting in Atlantic City last June with a gift of $1,000 and another of $500, promised for three years; another gift of $500 has since been made. Candidates for scholarships who intend to be medical missionaries for at least five years after graduation may receive funds as an outright gift, and candidates who intend to do general practice may receive funds as a loan to be repaid on the terms of the committee. The candidates accepted must be "of the highest character, the soundest educational preparation and most promising personality," and they must attend an A-1 medical college. The awards for 1925-1926 are to (1) Eleanor T. Hedrick, who will attend the College of Physicians and Surgeons, Columbia University, New York; (2) Luenna von Eltz, who will attend the Boston School of Medicine; (3) Mary A. Churchill, who will attend the Woman's Medical College of Pennsylvania, Philadelphia, and (4) Helen Semenenko, who will complete her studies, begun in the Constantinople Woman's College, at Tufts College Medical School, Boston.

LATIN AMERICA

Bicentennial of the University of Caracas.—Our Venezuela exchanges bring illustrated descriptions of the celebration of the founding of the university by Philip V. in 1725. The souvenir medal portrays the republic as a woman holding aloft a nine-branched torch to represent the first nine departments of the university. Appropriate tablets with historical inscriptions were unveiled. Dr. Diego Carbonell, the rector of the university, delivered the principal address of the gala meeting.

All Universities Closed by Government Decree.—The secretary of the U. S. Legation, Quito, writes in *School Life* that all universities in Ecuador were closed, August 11, by government decree. The universities were located at Quito, Guayaquil, Loja and Cuenca. There has been discontent for many years, he said, with the so-called higher education in that country. It has been too easy to obtain degrees, with the result that the country is flooded with doctors, the majority of whom are unable to earn a living and many of whom do harm by attempting to practice a profession for which they are not well prepared. The decree states that the universities will be closed temporarily, but it is believed they will remain closed for several years. One result probably will be the sending of more students abroad for higher education. The majority of local university students cannot afford to go abroad.

FOREIGN

Harveian Society Prize.—The Harveian Society of London has selected "The Etiology of High Blood Pressure and of the Respiratory Phenomena Associated with High Blood Pressure and Chronic Nephritis" as the subject for the Buckston Browne prize. The competition is open to any member of the medical profession registered in the British Isles or dominions under 45 years of age. The prize is a medal and the sum of £50.

Secretary on Organizing Tour.—Having been authorized by the council, and on "pressing request" from the South African Committee, the medical secretary of the British Medical Association, Dr. Alfred Cox, sailed, October 30, for South Africa on an organizing tour of all the branches there. He will confer with the South African Committee and will see as many members of the medical profession in that country as possible, reporting to the South African Committee and to the council on his return. The council instructed Dr. Cox to convey to the committee its best wishes for the success of its efforts to promote the solidarity of the profession in South Africa.

Chairman's Badge of Honor.—The British Medical Association, at its meeting in Bath recently, requested Mr. Allan G. Wyon to design and prepare a badge of office for the chairman of the council of the association. The badge has been prepared. It takes the form of a gold and enamel star, about 3⅛ inches across, with the central device a replica of the staff and serpent of Aesculapius in the form in which they appear above the Memorial Gates of the association's new home. Between the main star and the locket loop by which the badge is suspended is a smaller star bearing the initials "B. M. A.," and around the central device is the inscription "Chairman of the Council." The badge was presented to Dr. Robert A. Bolam at the council meeting, October 21.

No Nobel Medical Prize This Year.—The committee on award of the Nobel Foundation has decided to withhold the prizes this year in medicine, chemistry and literature, because, says the *Chicago Daily News*, no candidate had been proposed of sufficient importance. Alfred Nobel's will directed, it is said, that prizes be given to persons who had rendered humanity the greatest services in medicine, chemistry, physics, idealistic literature and the promotion of peace. The constitution of the Nobel Foundation, framed after the philanthropist's death, directs that no prize be awarded unless a work of sufficient importance has been accomplished. The Swedish government's taxes on the foundation last year amounted to about $162,000; the taxes, the *News* says, increase annually, causing a constant diminution in the value of the prizes.

Epidemiologic Report.—A total of 151 deaths had been reported, September 26, in the outbreak of cholera in Shanghai, according to the *Epidemiological Report* of the Health Section of the League of Nations, October 15. There were only six new cases reported in this outbreak the week ending September 26. The outbreak in Yokohama at that time seemed to be under control, but cases occurred during September in Kobe and Osaka. There was an outbreak of cholera in Manila the week ending September 26, when seventy-three cases were reported. There had been 145 cases and seventy-two deaths in Siam from cholera since the beginning of the year, and 160 cases in French Indo-China. The outbreak in Ceylon amounted to 223 cases and 158 deaths since the beginning of the year.——The incidence of typhus was lower during the last summer than at any time since before the war. The number of cases exceeded 100 only in Russia, Poland and Roumania, and in these places amounted to less than half of last year's figure. The mortality rate has been generally lower also, varying from 2 to 5 per cent. Typhus is more prevalent in North Africa than in 1924.——No case of smallpox occurred during the first eight months of the year in Ireland, Sweden, Finland, Austria, Bulgaria or Czechoslovakia, and only a few cases occurred in Scotland, Norway, Esthonia, the Netherlands and Hungary. A serious outbreak occurred in the Tanganyika territory in Africa, where 1,180 cases and 427 deaths were reported in August.——Reports for August show a higher incidence of infantile paralysis in many European countries but no serious epidemics occurred. The increase is most marked in Norway, Sweden, Denmark, Germany, France and Italy. There were 935 cases in twenty-seven states in the United States in the four weeks ending September 5, as against 696 cases during the preceding four weeks and 654 during the corresponding period of last year. ——This number of the report contains also several columns devoted to the history and epidemiology of yellow fever.

Deaths in Other Countries

Dr. **F. Tartuferi,** Bologna, professor of ophthalmology. ——Dr. **G. Perna,** Messina, professor of anatomy.——Dr. **Terson,** formerly professor of ophthalmology, Toulouse, aged 87.——Dr. **E. Franke,** professor of ophthalmology, Hamburg, aged 69.——Dr. **C. Bliedung,** privat-dozent of ophthalmology, Greifswald, aged 36.——Dr. **L. Voigt,** chief of the vaccination service, Hamburg, aged 90.

Government Services

Patients in Army Hospitals

There were 5,376 patients in army hospitals in United States, October 10, of whom 2,878 were active army or navy personnel; 1,960 beneficiaries of the Veterans' Bureau; 141 beneficiaries of the Soldiers' Home, and 397 civilians, including retired army and navy personnel, employees, dependents of officers and enlisted men and men in training. Of the total number of patients, 3,826 were in general hospitals, including the Station Hospital at Fort Sam Houston. At the end of the corresponding week of last year there were 3,833 patients in these same general hospitals, a decrease of seven for the present year.

Number of Flight Surgeons

According to a statement issued through the U. S. Army Air Service, there are sixty-seven flight surgeons in the regular army, twenty-six in the navy, twelve in the reserve corps and national guard and a number who have left the army and are now in civil life; in addition, there are twenty officers in the reserve and national guard who have qualified as physical examiners of aviators. The duties of a flight surgeon, the statement says, are: (1) selection of the flier by careful physical and mental examination; (2) classification of the flier by various special tests; (3) the care of the flier whereby he is maintained in a state of physical efficiency. The first involves a knowledge of general medicine, psychiatry, ophthalmology and otology; the second, physiology and psychology, and the third, physiology, psychiatry and general medicine. The physical requirements of aviators are such that less than 50 per cent. of the cadets at West Point and Annapolis are physically qualified to fly. Before the World War, physical factors involved in flying had not been studied, and there were no flight surgeons. The center for training flight surgeons in the School of Aviation Medicine, Mitchell Field, Mineola, L. I.

Report of Special Committee of Veterans' Bureau

Recommendations that Congress authorize more commodious accommodations at Saint Elizabeth's Hospital for the Insane in the District of Columbia are made in a report to the director of the Veterans' Bureau, by a special committee chosen to investigate conditions existing in this hospital so far as they affect veterans. The committee's report contains no facts to substantiate charges recently made by a federal grand jury of alleged maltreatment of insane patients, inadequacy of medical attention or improper detention of such patients. One criticism contained in the report is that physicians of the hospital are required to spend too much time doing clerical work. "In regard to alleged maltreatment of patients by attendant," the report states, "this committee questioned numerous patients and made personal observation in the different wards without eliciting any instances of such actions. General conditions at the hospital concerning sanitation, adequacy and quality of food and medical attention were all thoroughly investigated. In this inspection, which included the wards for the criminal insane, all wards were found to be maintained in an efficient and orderly manner." The hospital is caring for 4,500 patients in buildings which can adequately care for only 3,500.

U. S. Public Health Service

Surgeon Roy P. Sandidge will proceed not more than four times during the fiscal year 1926 between Honolulu and the Island of Molokai in connection with leprosy studies. ——Surgeon Wade H. Frost was directed to proceed from Baltimore to Cincinnati and return for a conference, November 11, regarding stream pollution.——Consultants Edwin O. Jordan, Chicago, Langdon Pearse, Chicago, and Earle B. Phelps, New York, were directed to proceed to Cincinnati and return, for a conference, November 11, regarding stream pollution investigations of the service.——P. A. Surgeon Kenneth F. Maxcy was directed to proceed from Montgomery, Ala., to Washington D. C., and return, for a conference with reference to an investigation of Brill's disease.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 9, 1925.

Professor Langley

John Newport Langley, F.R.S., professor of physiology at Cambridge, has died in that city, at the age of 73 years, from double pneumonia. He was one of the leading physiologists in the world, a skilled experimentalist and an accurate observer. He was educated at St. John's College, Cambridge, where he was a scholar in 1871, the year after Michael Foster came to Cambridge as praelector of physiology at Trinity College. This praelectorship was instituted largely under the advice of Huxley and was the foundation of the now famous Biological School of Cambridge. Langley attended Foster's early lectures, which stimulated him to adopt a scientific career. After taking a "first class" in the natural sciences in 1874, Langley began research at once. In 1877 he was elected to a fellowship at Trinity College, Cambridge. For some years he assisted Foster as a demonstrator and was made a university lecturer in 1884. In 1900 he became deputy to Foster, who had been professor of physiology since 1883, and in 1903 he succeeded him in the chair. He was elected a fellow of the Royal Society in 1883. He was president of the Neurological Society in 1893 and president of the physiologic section of the British Association in 1899. He took over from Foster the work of editing the *Journal of Physiology* in 1894 and became sole editor in 1907.

His first investigation, in 1875, was into the mutual antagonism of certain drugs on the heart and salivary glands. He established the differences in the action of the salivary glands in different animals and the changes produced in the gland cells, putting on firm basis the conception of a mesostate for enzyme secretion, which had been formulated by Heidenhain. He extended his observations to the gastric glands, and was the first, in conjunction with his pupils Sewall and Edkins, to work out the relation of the cell granules to the formation of pepsin. He made a detailed investigation of the brain of a dog (shown at the International Medical Congress of 1881) from which a large part of the cortex had been removed by Goltz. With his pupil Grunbaum he worked out the degenerating tracts in another of Goltz' dogs (shown at the International Physiological Congress in 1889). In that year he made an important discovery. Gaskell, his colleague at Cambridge, had been investigating the connection of the sympathetic with the cerebrospinal system and was working out the origin of the visceral fibers of the cranial and sacral nerves. Langley discovered that nicotin paralyzed the sympathetic at the junction of the white ramus with the ganglion cell and that it could thus be determined which fibers end in a ganglion and which pass through it. Langley's researches on the visceral nervous system, which occupied some thirty years, taken in conjunction with Gaskell's work, form one of the most important contributions to physiology emanating from the Cambridge school. He found that epinephrin had its usual stimulating effect after postganglionic fibers had degenerated. Elliott, who had obtained similar results, had put forward the important conception that epinephrin acts, not on the muscle substance or on the nerve endings but on some substance at the neuromuscular junction. Langley worked out this conception and fully established it, calling the substance "receptive substance."

Street Accidents in London

The increase of street accidents due to the development of motor traffic continues at an alarming rate. The latest

figures for London show that 207 persons were killed in the street in the quarter ending September 30. All but thirteen of these accidents were caused by motor vehicles. Omnibuses were responsible for thirty-two, tramcars for nine, cabs for eight, private motor cars for fifty-three, motorcycles for thirty-one, and trade and commercial vehicles for sixty-one. Horse drawn trade and commercial vehicles were responsible for nine deaths and pedal cycles for four. Accidents to persons or property during the quarter, including those already given, numbered 23,696. The largest totals were: private motor cars, 6,834; trade and commercial vehicles (mechanical), 4,748; pedal bicycles, 3,385; motorcycles, 2,588; omnibuses, 2,030; horse-drawn trade and commercial vehicles, 1,887; tramway cars, 1,174, and cabs, 965.

The Early Treatment of Mental Disease

The National Council for Mental Hygiene, which was formed with the object of improving the mental health of the community, has been making a careful census of the means available for the early treatment of mental disease. To this end, questionnaires were sent out. The first were addressed to the deans of the thirty-five medical schools. Of these, twenty-seven sent replies. It was found that, in twenty-four of the schools, instruction to students in early treatment of mental diseases was given by lectures or clinical demonstrations. Two schools provided clinical clerkships, and one school research laboratories and scholarships. Thirteen schools hold only one course of lectures or demonstrations annually, and one school affords a course only in alternate years. Twelve schools give postgraduate teaching, and in six of these the students are allowed to participate in this instruction. A second questionnaire was addressed to 237 large hospitals and infirmaries. Only twenty claimed to provide any special facilities for the treating of mental disorders. Of these twenty, fourteen provide an outpatient clinic and six admit inpatients to their wards. Only three, however, set aside beds for the mental cases. The council concludes that this analysis betrays the utter inadequacy of the arrangements for the treatment of patients suffering from uncertified and uncertifiable mental disorders. For the huge majority of the population there are no facilities for treating worth talking about and practically nothing is done to relieve the great suffering associated with mental disorder until such time as the patient becomes certifiable and is sent to a mental hospital—a result that could be prevented in many cases if it were not for the present apathy in dealing with the situation. A third questionnaire was addressed to the matrons of 316 Poor Law infirmaries. Twenty-five of these replied that lectures on functional nervous disease were given to nurses under training, and twenty-one stated that nurses obtained clinical experience in the care of such disorders. The committee concludes that the training of nurses in the treatment of mental disorders is much below the minimum desirable, especially having regard to the large number of patients whose needs demand nursing of this particular kind.

Death from Inability to Digest Food

A curious case of death from inability to digest food, for which no cause could be found, has been the subject of a coroner's inquest. The deceased was a girl, aged 19 years, a milliner's apprentice. Her mother stated that since the age of 16 she had gradually declined in health and had lost flesh. She was seen by physicians and specialists at the hospitals, but they could find nothing wrong with her. She had no appetite and never wanted to sleep. On going to bed, she collapsed and became unconscious. She died next morning without regaining consciousness. Dr. M. Bronte, government pathologist, made a postmortem examination. He said that the body was a skeleton and weighed just under 4 stone (25.4 kg.). He could find no disease, but all the organs were wasted and much below normal size. He attributed death to starvation due to the girl's inability to digest food. He had known one other case of a similar character.

Ill Effects of the Threat of an Irish Medical Register

The injury likely to be inflicted on the Irish medical schools by the project of the Free State government to establish a separate medical register in Ireland has been pointed out in previous letters. Official figures supplied by Trinity College, Dublin, show that the average number of first year students in the medical school for the ten years before the war was sixty-six. After demobilization the number rose, but in 1921, it fell back to sixty-one, about its prewar average. This year the number has fallen to thirty-five, the lowest since 1892. This great drop is regarded by the college authorities as largely, if not entirely, due to the proposal to establish a separate Irish medical register.

A Physician's Fatal Cigaret

The East Cheshire coroner held an inquest on a physician, aged 27, who had lighted a cigaret in his motor car, which immediately took fire and ran 70 yards enveloped in flames. The physician leaped out with his clothes ablaze. Shopkeepers rushed with rugs to extinguish the flames. His arms, head, neck and back were terribly burned, and he died the next day. A motor engineer stated at the inquest that the union on the pipe leading from the gasoline tank was leaking, and the ignition of a match in a covered car might cause fire. The coroner, in recording a verdict of accidental death, commented on the recklessness of lighting a cigaret when the physician, as he understood, knew that there was a leakage of gasoline.

PARIS

(From Our Regular Correspondent)

Nov. 2, 1925.

Skin Reactions Provoked by Certain Wines in Gouty Persons

At times gouty subjects manifest extraordinary sensibility toward provocative influences, especially toward certain foods. Certain physicians have upheld the idea that anaphylaxis might play a part in acute articular gout. Others, however, take the view that attacks of articular gout must be associated with shock. In a recent article, Widal, Abrami and Joltrain have reported the results of their researches of the last three years on the hypersensibility of gouty persons to wine, particularly the red wines of Burgundy, and the skin reactions provoked by these wines in gouty patients. To be sure, this method of approach does not indicate whether the skin reaction reveals anaphylaxis or idiosyncrasy. Furthermore, a patient will sometimes react positively to a substance to which, clinically, he does not appear hypersensitive. But, with these reservations, the skin reaction is valuable and is the only method of revealing hypersensibility to specific wines. It is manifestly impossible to require every patient to drink, experimentally, a certain quantity of each of the existing wines. Moreover, very few patients, forewarned of the danger of precipitating an attack of gout, are willing to submit to the experiment.

Widal and his collaborators, using various wines, experimented with nineteen subjects with typical articular gout. These patients belonged to widely different classes of society and their ages ranged from 30 to 72. Extracts of various foodstuffs were likewise employed in effecting skin reactions. These tests resulted thus: Of the nineteen subjects, in three the reactions were intense; in three they were negative, and in thirteen they were positive but weak (slight white elevation presenting a puffy appearance about the scarification, reaching its maximum at the end of half an hour, being surrounded at times by an erythematous zone and disappearing usually after an hour).

This reaction, be it never so slight, is produced only by certain wines that exert a peculiarly irritating effect on the skin of gouty patients. It is entirely lacking in a control scarification in which no wine is injected, or in a scarification into which a drop of nonirritating wine is introduced. Usually nothing similar is seen in normal subjects or in persons affected with diseases other than gout. Of thirty-three subjects free from gout, Widal and his collaborators secured positive results in only five. These five were no doubt exceptional reactions such as occur, from time to time, in other skin test methods in which widely different antigens are employed. The results were negative in seven patients with urticaria and four patients with asthma, who, by reason of their affections, were particularly interesting control subjects.

In the presence of gout, then, the skin reactions were positive in sixteen out of nineteen patients, whereas they were negative in thirty-nine out of forty-four cases in which gout was absent. The intensity of the reaction does not seem to depend on the activity or the latency of the disease. It is interesting that in gouty patients wines that induce positive skin reactions are principally red Burgundy wines, although positive reactions were secured with certain other wines. It would be interesting to know what the substances are that, in a liquid as complex as wine, elicit this evidence of hypersensibility. Although the authors have been unable to determine the exact nature of this substance, it is quite evident that these properties are analogous to those that give wines their so-called soil qualities. These properties of wines do not correspond to any geographic distribution. While it is true that all the red wines of Burgundy produce a positive reaction, the white wines of the same region have no effect. Our taste tells us that there is nothing in common between the red wines and the white wines of Burgundy. The conclusion seems reasonable, therefore, that in every wine the taste and the sensitizing capacity are due to the same substance.

Address of Professor Chagas at the Pasteur Institute

Last week, a special meeting was held in the large amphitheater of the Pasteur Institute. Prof. Carlos Chagas, director of public health, head of the Oswaldo Cruz Institute (founded at Rio de Janeiro after the model of the Pasteur Institute of Paris), and the representative of Brazil on the health council of the League of Nations, lectured on Chagas' disease, the form of trypanosomiasis occurring chiefly in animals, in Brazil. In a short address of welcome, Dr. Roux recalled the work of Oswaldo Cruz, and referred to the important part played by the institute that bears his name in the crusade against yellow fever, which has been nearly eradicated from Brazil. In return, Dr. Chagas expressed the homage and gratitude of his country to the scientists of the Pasteur Institute of Paris, at which Oswaldo Cruz spent some time as a student. The Brazilian professor then described the symptoms of the disease that he was the first to detect. He held out the hope that the disease would be completely eliminated fairly soon.

Ethylene Anesthesia

M. Papin of Paris has employed, for the last two years, ethylene anesthesia in all his urologic operations, and, at the recent French congress of urology, he gave an account of his experiences. He has completely abandoned chloroform and ether anesthesia, and rarely uses local, regional or intraspinal anesthesia. A perfect general anesthetic is one that is effective and harmless. For a period of two years, Papin used nitrous oxid, which has the advantage of being much less dangerous than chloroform and ether, but it is not so effective an anesthetic as ethylene. After a number of trials on animals, the author began, together with Ambard, to use ethylene anesthesia in operations on man. After having used ethylene in 700 cases, he affirms that it presents no disadvantages. It is mixed with oxygen in much the same manner as nitrous oxid; its use requires a certain amount of experience. Before ethylene is administered, a subcutaneous injection of pantopon is given, which suppresses the period of excitation, commonly slight at the worst. Anesthesia is complete in from one to twelve minutes—an average of five minutes. The awakening is without agitation or vomiting, as a rule. While vomiting does occur in a small percentage of cases, it is very slight. Ethylene does not affect the functioning of the kidneys. With the aid of this anesthetic, Papin has been able to operate on patients presenting rather marked general symptoms of nephritis, bad pulmonary conditions and somewhat grave cardiac lesions—in fact, in many groups of patients that he never would have risked subjecting to chloroform or ether. Ethylene is, however, highly inflammable, and, when mixed with oxygen, explodes with a loud detonation on coming in contact with a flame; but one needs only to take the same precautions as with ether in order to prevent accidents. Aside from this objection, Papin regards ethylene as the best of the anesthetics used in urology.

RIO DE JANEIRO

(From Our Regular Correspondent)

Oct. 15, 1925.

Symmetric Cyanoderma

Dr. Moreira da Fonseca has reported to the National Academy of Medicine what he considers a case showing a new syndrome, related to the sympathetic system. He has suggested the name of symmetric cyanoderma. His case was in a boy, 14 years old, who had been treated for malaria. The physical development was normal, but the skin exhibited symmetrically distributed dark blue spots. These did not yield to pressure, nor did exercise produce any change in them. No secretory or trophic changes were noted, nor modifications in sensitiveness or temperature. The spots were located in the face, where they seemed darker, the chin, ears, trunk, breasts, arms and legs, but always exhibiting a symmetrical arrangement. After a short period, they became yellowish red, the change starting in the center. The shape varied, being either round, elliptic or annular, and occasionally forming large patches resembling old ecchymoses. There were no syphilitic stigmas. The examination of the different systems showed no abnormality whatsoever.

After three weeks, the patient was cured of malaria. The blue spots soon disappeared after administration of epinephrin *per os*. In Dr. Fonseca's opinion, the case is interesting on account of the probable malarial etiology. The relation of the sympathetic system seems evident from the symmetrical distribution and the therapeutic results secured with epinephrin.

Sperm Cultures and Autovaccines in the Diagnosis and Treatment of Chronic Gonorrhea

Dr. Belmiro Valvêrde has just submitted to the National Academy of Medicine the results of his studies on sperm cultures in the diagnosis, and autovaccines in the treatment, of gonorrhea. The use of sperm cultures rather than urethral discharge for diagnostic purposes seems rational. The sperm traverses the whole lower genito-urinary tract, and during the orgasm, the muscles contract, thus furthering the evacuation of the urethral glands, prostate and seminal vesicles. In twenty-two cases of chronic urethritis, with prostatitis and other complications, Dr. Valvêrde examined the sperm. In only one case the gonococcus was found. Other organisms, such as staphylococci, pseudodiphtheric bacilli, enterococci, streptococci, were isolated in the others. After using autovaccines in large doses, the results were not

conclusive. There were many improved cases, but no real permanent cure.

The available statistics show many contradications. Taking as a guide for diagnosis the presence of gonococci in the sperm cultures, different authors have secured these results: Lebreton, 82 per cent.; Guépin, 70 per cent.; Maille, 94.2 per cent.; Giscard, 50 per cent.; Boeckel, 51 per cent.; Bilger, 44.61 per cent.; Nogués and Durupt, 80 per cent.; Chabanier, Barbellion and Lebert, 47 per cent.; Giscard, quoted by Janet, 36 and 18 per cent.; Valvêrde, 8.3 per cent.; Janet and Debains, 100 per cent. failures.

As to the use of autovaccines in treatment, the same uncertainty prevails: Lebreton, 98 per cent. cures; Bilger, 91 and 93 per cent.; Le Fur, 80 per cent.; Chabanier, Barbellion, Lebert, 54 per cent.; Maringer, Lacat, Oraison always observed complete failures; Valvêrde, 100 per cent. of failures. These enormous differences are apparently caused by centering attention on the gonococcus, to the neglect of the other organisms, which also are responsible for chronic urethral lesions.

Surgical Instrument Sterilization

Dr. Edilberto de Campos submitted to the Medical and Surgical Society a method for sterilizing surgical instruments. His idea is to keep them in dated trays containing glycerine and a phenol preparation. The advantage of the method is that it secures sterilization without oxidation and obviates the bother and trouble of boiling.

BUENOS AIRES

(From Our Regular Correspondent)

Oct. 20, 1925.

Rosario Medical School

The new building of the Rosario Odontological School was opened, October 18. It is undoubtedly the best equipped of its kind in this country. On the same date diplomas were delivered to the first graduates from the medical school. A fund of 70,000 pesos (about $25,000) was granted to the school for the purchase of radium to be devoted to the treatment of indigent patients.

Medical Congresses

Three congresses will be held here simultaneously in 1926. One of them, the third National Medical Congress, will be presided over by Prof. C. Bonorino Udaondo. The chief subject for discussion will be malaria. A number of prominent foreign guests will attend. The fourth South American Conference on Hygiene, Microbiology and Pathology will be presided over by Prof. E. Áraoz Alfaro, president of the national department of public health.

Argentine Medical Association

The Argentine Medical Association, which only recently passed the 1,000 mark in membership, has now the following branches, which meet regularly in its offices: internal medicine, biology, neurology and psychiatry, pathologic surgery, urology, otorhinolaryngology, ophthalmology, pediatrics, nepiology, phthisiology, radiology and physical therapy. The only national societies still holding out are those of surgery, obstetrics and gynecology—but these meet in the Medical Association quarters—and the Cancer Society, which has offices of its own.

Foreign Professors

The services of Prof. C. Nicolle, director of the Pasteur Institute of Tunis, have been engaged by the national department of public health. Professor Nicolle has already given three lectures on typhus fever, relapsing fever and atypical infections. He will conduct a postgraduate course in the Bacteriologic Institute and will make a survey of the Northern provinces.

Prof. G. Fichera of Pavia has given a course on cancer in the Buenos Aires Medical School. The national health department and the Surgical Clinic Institute are planning to engage his services for the period of one year, with an option on them for another year.

The chair of physiology in the Rosario Medical School has become vacant through the resignation of Prof. O. M. Pico. Through some unexplainable reason, the directing board has decided to fill the position with an Italian professor, instead of choosing one of the younger men in the country.

Hospital Improvements

The Rawson Hospital addition, costing about 3,000,000 pesos (about $1,200,000), is about to be completed. This institution will now have room for 1,300 patients. As soon as this construction is out of the way, work will be started on the Ramos Mejía Hospital, at a similar cost. The Salaberry Hospital will soon have new pavilions of surgery, maternity, gynecology and pediatrics, and new administration offices, costing about 340,000 pesos ($136,000). The Pirovano Hospital is being remodeled at a cost of 800,000 pesos ($320,000), and 200,000 pesos ($80,000) has been allotted to the Alvear Hospital for a dispensary, a surgical pavilion, a nurses' home and a children's building. The funds available for hospital modernization amount to 18,000,000 pesos ($7,380,000).

Trachoma

The antitrachoma work is being pushed in the Santiago del Estero province. Some areas have shown 30 per cent. infection. A special trachoma station will be opened at Quebracho Coto.

Typhus Fever

Typhus fever has never made its way inland. In September, however, quite a number of deaths were reported, from the Andes region, at Tecka and Languineo. On investigation, it was found the disease had been imported over the Chilean border.

Malaria

Dr. G. Strode of the Rockefeller Foundation has returned to Brazil, after coming to an understanding with the national department of public health as to the malarial campaign. Dr. Nelson Davis has already opened an office at Tucumán, and the work will start at Concepción. The International Health Board will be in full charge of the work, the Argentine government at first bearing half the expense. The percentage will gradually increase until in about five or six years the whole cost of operation will be borne by the Argentine people. Next year, the foundation will help in hookworm work in the Corrientes province.

NETHERLANDS

(From Our Regular Correspondent)

Oct. 15, 1925.

Quinin Prophylaxis in Malaria

In the crusade against malaria through prophylaxis by quinin the findings seem contradictory. In malarial regions therapeutic doses of quinin are necessary to adequate prophylaxis. Dr. Nicolai recently published his results in a group of laborers in the Dutch East Indies to whom he applied the Ziemann treatment. This is based on the belief that injection of 1 gm. of quinin maintains resistance for four days, since quinin may be recovered from the urine for three successive days. Nicolai, however, noted absence of quinin after thirty-eight hours in 20 per cent. of the cases and after forty-eight hours in the majority of the cases. He could not see that either the number of new cases or the relapses was notably decreased.

The Antimalaria Crusade

The official antimalaria crusade has been replaced by an antimalaria organization that appeals chiefly to the people.

The only official body in the field is the scientific commission on malaria. These two organizations are continuing their work—both are interested in larvicidal measures during hibernation. Swellengrebel has published a study based on the dissection of more than 10,000 anopheles mosquitoes. He found the majority infected from September to December, and again in February. He found few or none infected in summer, although May, June and July are the months in which the incidence of malaria is the greatest. This is because in autumn and winter the anopheles mosquitoes remain in the buildings, where they are found if they are infected, whereas in summer they leave the buildings to deposit their eggs and probably do not return, although many newly hatched insects take their places.

After-Care Colony for the Tuberculous

A movement is on foot to establish in Friesland an after-care colony which shall look after tuberculous patients coming from a sanatorium until they can again fill a place in society. A patient just out of a sanatorium will find it difficult to reestablish himself in his former occupation or to take up some new work with sufficient energy to succeed. It is to such convalescents that an after-care colony renders service.

Council on Medical Ethics in the East Indies

A council on medical ethics will be established in the Dutch East Indies, composed of three physicians and two jurists. The chairman of the council will be appointed by the government together with the medical association and the head of the army. The ethical council must familiarize itself with both the civil and the military problems of medicine.

The Three Hundredth Anniversary of the Hospital at Zutphen

The hospital at Zutphen celebrated this year its tricentenary, the institution having been established in 1625 to furnish hospital accommodations for the poor of the city. On this occasion, the management published an historical volume. The origins of the institution are somewhat obscure, but its activities are mentioned at an authentic date previous to 1625. One of the buildings still in existence was completed in 1441, but it was not until 1625, in connection with an epidemic of plague, that the various services were centralized.

Antiscarlatina Serums

Aldershoff has just published in the *Nederlandsch Tijdschrift voor Geneeskunde* a detailed account of researches on antiscarlatina serums. Using strains of *Streptococcus hemolyticus-scarlatinae* secured from America, the author prepared, at the serologic institute at Utrecht, a scarlet fever toxin, the effect of which he has observed during the first days of the disease, the period most favorable for the Dick test. The results of his trials confirm and supplement the findings of Dick. In a family of ten children at Leyden, all of whom were subjected to the Dick test, five reacted positively and had scarlet fever; five negatively and did not have it.

In order to secure an antiscarlatina serum with the toxin prepared at Utrecht, the author followed the method that is employed in the preparation of antidiphtheritic and antitetanic serums. He describes his successive trials in this direction until he secured a serum which, when injected subcutaneously into two children suffering from grave scarlet fever, in quantities of 40 and 22 c.c., respectively, caused a marked fall of temperature. The author thinks that efforts to secure a more powerful antitoxic serum by concentration should be continued. The serum prepared by Dick has, apparently, equally favorable effects on the course of scarlet fever. The method of preparation is the same, but the author thinks that heating the serum at 56 C., as carried out at Utrecht, protects the patient against serum accidents.

Fumigation and Disinfection

The official journal *Nederlandsch Staatscourant* contains a new order with reference to fumigation and disinfection by hydrocyanic acid (prussic acid), the toxic compounds of cyanogen, or any substances that may form toxic compounds of cyanogen. These substances may be used only under competent direction. Furthermore, there must be ready for use (1) a sufficient number of effective gas masks, and (2) equipment for first aid. After disinfection of bedding, clothing, carpets, etc., by hydrocyanic acid, they should be taken into the open air, dried if necessary, and beaten. Foodstuffs that have been subjected to hydrocyanic acid must have all traces of it removed. The residues of the products used to generate the toxic gases must be removed with care, in order to eliminate danger for man or animals. No room subjected to the action of hydrocyanic acid, or into which toxic gases may have penetrated, may be used until the air charged with gas has been expelled and the use of suitable reagents has shown that the air is free from toxic substances.

The Potency of Serums and Vaccines

Regulation of the sale and use of serums and vaccines has been made the subject of a ministerial decree, of which a brief résumé follows: Potency of serums in circulation must be tested every six months. If a lot no longer meets the requirements, the entire lot must be condemned and recalled from circulation. Notice of such recall, with the mention of the lot number, must be made in the *Staatscourant*, the *Nederlandsch Tijdschrift voor Geneeskunde* and the *Pharmaceutisch Weekblad*. The period during which serums may be expected to meet the requirements is three years, provided they are kept at a low temperature.

An Historical Medical Exhibit

On the fiftieth anniversary of the foundation of the White Cross of North Holland, an exhibit of everything pertaining to medicine and the art of healing, including paintings, documents and manuscripts, was organized at Alkmaar. Many museums lent a number of treasures for the exhibit. There was a portrait of Van Ostade representing the physician in his laboratory; there were works by Franz Hals and by Rembrandt, and a choice collection of engravings.

A Distinction Conferred on Professor d'Herelle

The Royal Academy of Sciences, at a recent special session, bestowed the Leeuwenhoek medal on Professor d'Herelle in recognition of his researches on the bacteriophage. Professor Eijkman of Utrecht delivered the presentation speech and decorated the scientist with the medal.

Child Morbidity and Mortality

At the convention held at Utrecht on the twenty-fifth anniversary of the foundation of the Society of the Green Cross, the object of which is the development of public hygiene and the improvement of domiciliary care of children, Dr. Sanden of Rotterdam in his address made a comparative study of child morbidity and mortality in the cities and rural districts of the Netherlands. Forty years ago, the morbidity and mortality rate was much higher in the cities; at present the reverse is true. However, the more detailed examination of the statistics shows that in some rural communes the rate is much lower than in others. There is a possibility, therefore, of improving the situation in the rural communes, especially since the principal factor in the mortality is summer dysentery. In the curves published by the city of Amsterdam the customary apex due to summer dis-

cases has been conspicuously absent in recent years (since 1905). Through more rigorous discipline, it is thought possible to eliminate the apex from the curves of other regions. This is the task that the Society of the Green Cross proposes to accomplish.

BERLIN

(From Our Regular Correspondent)

Oct. 24, 1925.

Infantile Paralysis, Meningitis and Dysentery in 1924

In 1924, there were 507 cases of epidemic infantile paralysis in Germany, as against 550 in 1923. From January to June the number of cases ran: 17, 18, 18, 11, 14 and 13; during the four following months there was an increase (62, 69, 74 and 116 cases), but for November and December only 59 and 36 cases, respectively, were reported. The incidence was highest in Mecklenburg-Schwerin (2.62 per hundred thousand population). Lübeck, Hessen and Baden follow with 2.42, 2.00 and 1.42 per hundred thousand population, respectively. In the other states or principalities the rate fell below 1 per hundred thousand. No cases were reported from Wurttemberg, Bremen, Lippe, Waldeck and Schaumburg-Lippe. In Prussia there were 318 cases, the incidence having been highest in the government district of Magdeburg (92 cases).

In 1924, there were in Germany 749 cases of cerebrospinal meningitis, as compared with 1,149 in 1923. During the first seven months, the number of cases were: 72, 75, 77, 88, 74, 56 and 72. In August, the number dropped to 42 and rose again the two following months to 51 and 56, respectively; November showed then the lowest incidence of any month of the year (36), while in December 50 cases were recorded. Hamburg had the highest incidence, 3.00 per hundred thousand population.

In 1924, Germany recorded 5,845 cases of dysentery, as against 8,449 in 1923. The number of cases occurring during the first five months and during the last two months was much higher than during the warm weather months. From January to May inclusive there were 295, 280, 312, 317 and 302 cases, respectively, while November showed 265 and December 300 cases. During the five-month period from June to October, there were respectively 429, 1,002, 1,125, 748 and 470 cases. Hamburg showed the highest incidence, 16.24 cases per hundred thousand.

The Changeability of Bodily Characters—a Chapter in Ethnography

Professor Kruse, the director of the hygienic institute of the University of Leipzig, discussed recently the changeability of bodily characteristics of the various races of mankind. Kruse casts doubt on the "axiom" that race characteristics are permanent. To begin with, it is not true of height. Conditions of living have exerted a marked influence. Observations on emigrants from Germany are here significant. Whereas in Europe Germans are 0.75 cm. shorter than Englishmen, this difference disappears when both have emigrated to North America and live under the same conditions. Possibly the changeability of the cephalic index, which is usually regarded as the most important racial character, is just as significant as the modifications in the height index. Hitherto, scientists have for the most part explained regional differences or differences in various epochs in a given race as due to selection or to admixture of foreign strains, minimizing the influence of modes of living. The investigations of Kruse show that in German territory and under German modes of living the cephalic index of the Jews has gradually approached that of the Germans. Kruse's researches on the relative head size in Germans who have emigrated from one province to another are also significant. Persons who—the same as their parents—were born in regions characterized by prevailingly long-headed or short-headed inhabitants, as the case may be, have an average cephalic index of 81.3 and 84.1, respectively. Marked variations, however, are noted under different conditions: 1. Persons who themselves were born among long-headed people but whose parents came from short-headed stock have a cephalic index of 82.5. 2. Other persons who were born in regions where people are short headed but whose parents came from long-headed forebears have an index of 83.4. 3. Persons one of whose parents came from long-headed and the other from short-headed stock have an index of 81.5, if they themselves were born in a region of long-headed inhabitants, and an index of 83.7, if they were born among short-headed people. From these facts it is apparent that with us in Germany the cephalic index is influenced more by the place of birth than by hereditary tendencies. Kruse admitted that he was not prepared to explain this, but the facts compel us to be cautious about using the cephalic index as a racial characteristic. Boas discovered no changes in the descendants of the Jews and the southern Italians who had immigrated to North America. But the fact that in Europe Jews in northern latitudes have a lighter complexion than those living farther south indicates that here modifications may be brought about during the course of centuries. The fact that the complexions of European races are darker as we go south affords further proof that climate exerts an effect on the pigmentation of the skin in Europeans. We need not ascribe this to selective influences but may assume a direct effect of the climate. The shape of the face may be the most important racial characteristic. If we consider the forehead, the nose and the chin, we can separate at once Caucasians from the Mongolian and the negroid races. The profile is much more pointed in the former than in the latter. A subdivision, however, of the Caucasian or European race cannot be effected on the same basis. The frontal view is better adapted for the differentiation of various types of faces than is the profile. But the frontal facial aspects seem to be affected by regional influences similar to the cephalic index. These findings confirm Kruse in his conviction that the widespread teachings with respect to the characterization and distribution of European races should be viewed very skeptically.

Official Warning as to the Overcrowding of the Medical Profession

The Prussian minister of science, art and education issued, August 21, the following warning to prospective students of medicine:

It is well known that, even before the Great War, the medical profession in Germany was overcrowded. During the war, a large number of medical students who had not completed the full course were given their diplomas in order that the needs of the army might be met. Other students were allowed to take their final examinations on completion of shortened courses. After the war, many German physicians returned to Germany from foreign countries, the German colonies, the ceded territories and the occupied regions. Many physicians of German extraction came into Germany from the neighboring countries. An unusually large number of former army officers took up the study of medicine. These facts serve to explain why Germany today, with a population six millions less, has a much larger number of physicians than the old German empire. Another important factor lies in the circumstance that, owing to the financial depression that has prevailed since the war, the incomes of wide circles of the middle classes have become so reduced as to compel them to seek protection against sickness by becoming members of the various health insurance societies, thus depriving the physicians of many of their best paying private patients. The principal revenue of the medical profession today is derived from the members of the social insurance organizations: from the *Krankenkassen*, the industrial insurance societies and the provincial insurance associations. But, as the result of the war and postwar conditions, particularly the inflation of the paper currency, the finances of these societies and associations have become badly shattered. On the other hand, the number of days' illness among the insured, as the result of undernutrition and the consequent reduced resistance of the population, has increased to no inconsiderable extent. At the present time, the insured members of the aforementioned organizations are scarcely able to pay the physicians larger fees than they are now paying. Medical study with its large number of obligatory lectures and its six-year course is the most expensive of all academic professions, whereas the prospects for young physicians are at present about the worst imaginable. For the next few years, therefore, students are strongly urged to renounce their plans to take up the study of medicine.

Marriages

Chester Leonard Oppegaard, Crookston, Minn., to Miss Helen Hagley of Duluth, in September.

Lyle Steele Booker to Miss Katherine Helen Amrhein, both of Durham, N. C., November 10.

Julius Boniman Stokes to Miss Jennie Beatrice Scotten, both of Harwood, Mo., October 17.

Karl Walter Anderson, Minneapolis, to Miss Crystal Justus of Hopkins in September.

Carl G. Swendseen to Miss Helen Mae McCune, both of Minneapolis, in September.

Joseph Maurice Fruchter to Miss Sara B. Benn, both of Philadelphia, October 20.

Harold E. Wilmot to Miss Dorothy Frisch, both of Litchfield, Minn., in September.

George M. Tangen to Miss Ruth Victor, both of Canby, Minn., in September.

Cecil J. Watson to Miss Joyce Patterson, both of Minneapolis, in September.

Adam M. Smith to Miss Helen Carrigues, both of Minneapolis in September.

Aaron B. Yasinow to Miss Rose Lucille Makoff, both of Cleveland, June 23.

Deaths

Morgan Preston Moorer ● Biltmore, N. C.; Medical College of the State of South Carolina, Charleston, 1901; served in the M. C., U. S. Army, during the World War; at one time health officer of Buncombe County; formerly connected with the U. S. Veterans' Hospital, No. 60, Oteen; aged 46; died, November 3, at a sanatorium near Asheville, following a long illness.

James Davidson McDowell ● Vincennes, Ind.; Hospital College of Medicine, Medical Department Central University of Kentucky, Louisville, 1894; formerly county health officer and mayor of Vincennes; aged 51; died, November 2, of a bullet wound, presumably self-inflicted.

Franklin Powell Turner, Cleveland, Miss.; Memphis (Tenn.) Hospital Medical College, 1901; member of the Mississippi State Medical Association; served in the M. C., U. S. Army, during the World War; aged 46; died, November 9, of heart disease.

Dewey Everett Westerman, Welch, W. Va.; University of Tennessee College of Medicine, Memphis, 1924; intern, Welch Hospital, No. 1; aged 27; was killed, October 31, when the automobile in which he was driving plunged over an embankment.

David Emory Shy ● Sedalia, Mo.; University of Kansas School of Medicine, Rosedale, 1907; president of the Pettis County Medical Society; on the staff of the Missouri, Kansas and Texas Railroad Hospital; aged 46; died, November 5.

Ralph W. Murray, Jansen, Neb.; Northwestern Medical College, St. Joseph, 1892; member of the Nebraska State Medical Association; aged 57; was killed, October 31, when the automobile in which he was driving was struck by a train.

Thomas Francis Joyce, Lawrence, Mass.; Medical Department of the University of the City of New York, 1883; member of the Massachusetts Medical Society; on the staff of the Lawrence Tuberculosis Hospital; aged 68; died, October 29.

Andrew Jefferson Nelson, Seattle; Medical Department of Columbian University, Washington, D. C., 1893; member of the Washington State Medical Association, and the Medical Society of Virginia; aged 64; died, November 1.

Louis Stinson, Jacksonville, Fla.; University of Maryland School of Medicine, Baltimore, 1911; member of the Florida Medical Association; formerly county physician; aged 43; died, November 1, at Hosford, of pneumonia.

William Allen Martin, Sapulpa, Okla.; University of Oklahoma School of Medicine, Oklahoma City, 1915; member of the Oklahoma State Medical Association; aged 47; died, November 5, of heart disease.

George Martin Harrison, Meshoppen, Pa.; University of Michigan Medical School, Ann Arbor, 1875; member of the Medical Society of the State of Pennsylvania; aged 74; died, September 28, of heart disease.

James Lawton Hiers ● Savannah, Ga.; University of Georgia Medical Department, Augusta, 1889; formerly on the staff of the Park View Sanitarium; aged 60; died, November 8, of heart disease.

John H. Troutt, Madison, Ga.; University of Georgia Medical Department, Augusta, 1889; member of the Medical Association of Georgia; member of the board of education; aged 57; died, November 1.

William Carr ● New York; Bellevue Hospital Medical College, New York, 1872; also a dentist; aged 83; died, October 15, at Centre Moriches, N. Y., of bronchopneumonia and diabetes mellitus.

John Alvis Briley, Nolensville, Tenn.; Vanderbilt University Medical Department, Nashville, 1888; University of Nashville Medical Department, 1890; aged 76; died, October 31, at Antioch.

Henry D. Sadler, Rison, Ark.; University of Arkansas Medical Department, Little Rock, 1891; member of the Arkansas Medical Society; aged 63; died, October 28, of heart disease.

William Macon Smiley, Salem, Va.; Medical College of Virginia, Richmond, 1901; formerly connected with the Baptist Orphanage; aged 57; died, November 5, following a long illness.

Henry Bolin Allen, Americus, Ga.; University of Georgia Medical Department, Augusta, 1902; member of the Medical Association of Georgia; aged 47; died, November 8, of pneumonia.

Thomas M. Smoot, Woodbury, Tenn.; University of Tennessee College of Medicine, Memphis, 1906; member of the Tennessee State Medical Association; aged 54; died in October.

John James Rectenwald ● Mount Oliver, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1895; aged 52; died, November 3, at St. Francis' Hospital, Pittsburgh.

William D. Horne, Memphis, Tenn.; Vanderbilt University Medical Department, Nashville, 1878; formerly member of the state legislature; aged 73; died, October 7, following a long illness.

Daniel P. Redwine ● El Campo, Tex.; Kentucky School of Medicine, Louisville, 1891; formerly member of the El Campo Board of Health; aged 66; died, November 5.

Joseph Forrester ● Chicago; Jefferson Medical College of Philadelphia, 1891; on the staff of the Chicago General Hospital; aged 64; died, November 16.

Felix L. Serres dit St. Jean, Anaconda, Mont.; Victoria University Medical Department, Toronto, Ont., Canada, 1889; aged 61; died, November 2.

William P. Schwartz ● Louisville, Ky.; University of Louisville School of Medicine, 1895; aged 63; died, November 4, following a long illness.

George A. Teunisson, Monticello, Miss.; Medical Department of the Tulane University of Louisiana, New Orleans, 1884; aged 84; died, in October.

Henry C. Wells, Laconia, N. H.; Cleveland University of Medicine and Surgery, 1872; formerly county physician; aged 69; died, September 4.

Edwin H. Smith, Chicago; McGill University Faculty of Medicine, Montreal, Que., Canada, 1884; aged 62; died, November 15, of carcinoma.

William P. Bryan, Huntington, W. Va. (years of practice); aged 79; died, September 16, at the Chesapeake and Ohio Hospital, of heart disease.

Lloyd Hampton Forman, Buckhannon, W. Va.; College of Physicians and Surgeons, Baltimore, 1885; aged 64; died, October 30, of heart disease.

Claude Lee Haynes, Wills Point, Tex.; Southern Methodist University Medical Department, Dallas, 1904; aged 49; died, suddenly, October 30.

Clarence Ravil Smith, Philadelphia; Hahnemann Medical College of Philadelphia, 1900; aged 47; died, November 3, at the Hahnemann Hospital.

William H. Martin, Kahoka, Mo.; College of Physicians and Surgeons, Keokuk, Iowa, 1868; formerly a druggist; aged 88; died, November 3.

Laura Payon Hulme, Kansas City, Mo.; Woman's Medical College of Pennsylvania, Philadelphia, 1886; aged 65; died, October 30 of pneumonia.

William H. Smith ✠ St. Clair, Mich.; University of Michigan Medical School, Ann Arbor, 1879; died, November 2, of cerebral hemorrhage.

Charles B. Strang, Duval, Wash.; Medical Department Hamline University, Minneapolis, 1896; aged 54; died suddenly, November 1.

George Antonius Keland, Madison, Wis.; Wisconsin College of Physicians and Surgeons, Milwaukee, 1912; aged 43; died, September 22.

Charles W. Coleman, Billings, Mont. (licensed, Minnesota, under the Act of 1887); aged 75; died, November 1, at St. Vincent's Hospital.

George Gregory Shelton, Ridgefield, Conn.; New York Homeopathic Medical College and Hospital, 1883; aged 72; died, November 3.

Jesse Diverty Lippincott ✠ Newark, N. J.; Jefferson Medical College of Philadelphia, 1894; aged 53; died, November 5, of heart disease.

John Calhoun Otis ✠ Poughkeepsie, N. Y.; Homeopathic Medical College of the State of New York, 1868; aged 78; died in October.

John Jones Owen ✠ Philadelphia; Jefferson Medical College of Philadelphia, 1878; aged 75; died, November 7, of angina pectoris.

Lewis Q. Thompson, Gridley, Calif.; University of Arkansas Medical Department, Little Rock, 1884; aged 75; died recently.

Alexander Hamilton Biscoe, Pendleton, Ark.; Beaumont Hospital Medical College, St. Louis, 1901; aged 47; died, October 30.

Marshall Cassingham, Wilmington, Ill.; Rush Medical College, Chicago, 1875; Civil War veteran; aged 84; died, October 29.

James Chamberlane Throgmorton, Earle, Ark.; Independent Medical College, Chicago, 1897; aged 84; died, November 1.

Frederick Wallace Wilcox ✠ Minonk, Ill.; Rush Medical College, Chicago, 1886; aged 61; died, November 7, of cerebral hemorrhage.

William James Jones ✠ Syracuse, N. Y.; Albany (N. Y.) Medical College, 1913; aged 38; died, October 30 of pneumonia.

Jacob U. Schnetzler, Toledo, Ohio; Northwestern Ohio Medical College, Toledo, 1885; aged 66; died, October 24, of anemia.

John B. Gordon, Tiffin, Ohio; Eclectic Medical Institute, Cincinnati, 1878; aged 78; died, November 5, of cerebral hemorrhage.

Knut O. Hoegh, Minneapolis; University of Christiana, Norway, 1869; aged 81; died, in October, following a long illness.

Louis Eaton Jenkins, Auburn, N. Y.; Syracuse University College of Medicine, 1905; aged 45; died, August 5, of acidosis.

Edward V. Anderson, Woodstock, Ill.; Rush Medical College, Chicago, 1871; aged 77; died, October 31, at Riverside, Calif.

John Judson H. Sharp, Genesee Depot, Wis.; Chicago Homeopathic Medical College, 1891; aged 73; died, November 6.

William F. Harris, Sentinel, Okla.; Atlanta College of Physicians and Surgeons, 1900; aged 48; died, October 13.

Elwood Wendell Lewis, Chicago; Jenner Medical College, Chicago, 1914; aged 35; died, August 12, of acute nephritis.

Frank Addington Pomeroy, Beverly, Ohio; Starling Medical College, Columbus, 1904; aged 58; died, October 30.

Samuel D. Douglas, New York (licensed, New York, year unknown); aged 57; died, October 30, of skull fracture.

Charles Bunce Collins, Indianapolis; Medical College of Indiana, Indianapolis, 1901; aged 52; died, November 4.

Ralph Ludwig Larsen, San Francisco; Rush Medical College, Chicago, 1902; aged 48; died, October 31.

Charles U. Aydelott, Cincinnati; Medical College of Ohio, Cincinnati, 1880; aged 76; died, November 4.

Lewis A. Rader, Spencer, W. Va. (years of practice); aged 82; died, November 2.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

DIABESAN

Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following report.

W. A. PUCKNER, Secretary.

Diabesan is the name of a preparation claimed to be "indicated in all cases of diabetes and glycosuria," and marketed by the Solosan Company of Morristown, New Jersey. According to an advertising circular issued by the Solosan Company, Diabesan contains as its chief therapeutic agent:

". . . the trypsin of dead yeast cells, 'not dried yeast cells,' cells which are no longer able to cause fermentation, and therefore do not affect the carbohydrate food; but on the other hand in contrast to all other yeast preparations digests albumen and reduces it to an animo-body [sic] where it can be absorbed and used in rebuilding wasted tissues."

The claim is made that Diabesan "restores to the human system the faculty to digest both albumen and carbohydrates and makes use of same in the economy of the human body."

DIABETES AND THE REMEDY

Under date of June the 8th, 1925, Dr. J. McK. of New York City writes:

Dear Doctor:

Have been getting good results from my first hundred tablets of Diabesan. Reduced sugar from 4 gr. per oz. to 0.70 per oz. giving 12 tablets a day. Am now giving 10 per day for second hundred. Would like you to send me two hundred tablets C. O. D., etc.

DOCTORS FOR DIABETES PRESCRIBE

DIABESAN

Safe and Efficacious

LITERATURE ON REQUEST

SOLOSAN COMPANY, Inc. MORRISTOWN, N. J.

When writing Advertisers please mention Oldest Medicine

The evidence offered to support this claim is contained in a paper written by A. H. Werner, president of the Solosan Company, and circulated as a "Reprint from the *Medical Standard,* May, 1925," entitled "The Rational Treatment of Diabetes." This paper contains a number of fallacies that vitiate the rather intangible and very poorly written argument. The first of these is that in diabetes it is difficult for albuminous foods to be properly digested. There seems to be no ground for this assumption, which forms the underlying premise of the author's argument. An equally questionable assumption is the further claim that if protein be properly digested, all the woes of the diabetic will disappear and that the trypsin contained in Diabesan will accomplish this result. Dead yeast presumably contains a small amount of tryptic ferment. But it is doubtful that it survives passage through the stomach; and, in any event, it is unlikely that yeast contributes materially to the aid of protein digestion under the conditions of alimentation that ordinarily prevail in patients with diabetes. It would therefore appear that the claims for Diabesan are irrational and unscientific.

Since the assumptions on which the claims for Diabesan are based have no more to support them than the published work of A. H. Werner, president of the Solosan Company, the Bureau of Investigation was asked for a report on his medical qualifications. The Bureau reported as follows:

"According to our records, August Henry Werner claims to have been graduated in medicine in Germany. He is said to have come to the United States as agent for the manu-

facturers of 'Iodeol' and to have formed the Werner Chemical Company to exploit that product. As president of that company he submitted a paper on Iodeol in 1914 which bore the name 'A. H. Werner, M.D., Graduate of the University of Strassburg, Alsace.' A search through the lists of medical graduates of the University of Strassburg covering the years 1882 to 1912 failed to reveal the name of A. H. Werner.

"In 1914 a copy of the *International Brief*, a publication issued by a New York quack, contained, in addition to a full page advertisement of Iodeol, an advertisement of one A. H. Werner, described as 'Professor Psychotherapy and Biology of the Old Physio-Medical College.' This 'college' has since been exposed as a crude diploma mill. The *International Brief* purported to be the official organ of the 'International Alliance of Physicians and Surgeons' of which an A. H. Werner was given as one of the 'vice-presidents'!

"In 1915 one A. H. Werner was advertising a 'consumption cure' in New York newspapers, and later was convicted of practicing without a license and fined. In 1916 the name of A. H. Werner appears as 'second vice-president' of the 'American Association of Progressive Medicine,' an organization that was exposed in THE JOURNAL, Sept. 19, 1925. In the same year A. H. Werner seems to have been 'medical advisor' for the Bachelet Medical Apparatus Co. In this capacity he applied for advertising space in THE JOURNAL, but the advertisement was rejected. In 1917 and again in 1918 Werner is said to have taken the New York State medical examinations and to have failed each time.

"In 1920 one A. H. Werner was president of the Rhinol Co., Inc., exploiting a 'Specific in Hay Fever.' The advertising of Rhinol was bolstered up by a 'Reprint from *Charlotte Medical Journal*, December, 1919,' credited to 'A. H. Werner, M.D.' In 1921 the name of A. H. Werner appears as a member of the board of trustees of the 'Allied Medical Associations of America,' which was exposed in THE JOURNAL, July 5, 1919. In 1924 the name of A. H. Werner was listed as one of those who would present a paper at the 'American Association for Medical Physical Research,' which was dealt with in THE JOURNAL, Sept. 19, 1925."

The biographical files of the American Medical Association —the most complete extant and based on official data—fail to show that there is any other A. H. Werner, calling himself a physician, than August Henry Werner.

From the Bureau's report it appears that A. H. Werner, president of the Solosan Company, is not a properly qualified medical authority. The case reports appended to the "Reprint" on Diabesan are quite unconvincing. They are so meager and incomplete that nothing is proved either way. The claims for Diabesan are not in harmony with accepted facts, nor supported by acceptable evidence; nor does there appear to be any evidence that trypsin—or a preparation such as Diabesan, said to contain it—has any value in the treatment of diabetes.

Correspondence

THE ACIDIFICATION OF GASTRIC CONTENTS IN DETERMINING NEUTRAL RED EXCRETION

To the Editor:—In Winkelstein and Marcus' recent article "The Excretion of Neutral Red into the Human Stomach" (THE JOURNAL, October 31, p. 1397) they reported that they failed to recover neutral red in the gastric contents of some cases of achylia gastrica other than pernicious anemia. According to the method they used, "the patients presented themselves with a fasting stomach; the Rehfuss tube was passed, and 2 c.c. of a 1 per cent. solution of neutral red (Ehrlich's neutral red was freshly dissolved in distilled water and boiled) was injected intramuscularly in the gluteal region. The gastric contents were aspirated every two minutes until the dye appeared as a definite pink discoloration." In our recent publication (THE JOURNAL, September 12, p. 794) we pointed out the fallacy of looking for pinkish coloration in cases with anacidity, unless the contents are brought to a hydrogen ion concentration sufficiently acid to give the characteristic red-pink reaction of neutral red in acid solutions. We feel that this accounts for the relatively large number of cases of achylia reported in the literature which failed to excrete the dye. We have seen repeatedly patients with anacidity who had yellowish gastric contents after the intramuscular injection of neutral red, which strongly suggested regurgitated bile. However, on the addition of glacial acetic acid bringing the solution to the acid side of litmus, a definite reddish coloration occurred. As Winkelstein and Marcus do not mention the employment of this precaution, we are wondering whether this might not account for their failure to recover the dye in certain cases of achylia gastrica other than pernicious anemia. A series of cases have been studied since the group reported in our publication; we have never recovered neutral red in a patient with pernicious anemia and have not failed to recover it in every other case of anacidity studied.

Winkelstein and Marcus' results are of course not strictly comparable with ours because of two factors in technic: First, appearance time was noted by them on a relatively empty stomach; we instilled water every fifteen minutes. Second, they gave 2 c.c. of a 1 per cent. solution intramuscularly (dosage of 20 mg.); we gave 4 c.c. (40 mg.).

PERCY B. DAVIDSON, M.D., Boston.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

VERIFICATION OF GRADUATION

To the Editor:—I see by THE JOURNAL, October 24, under the heading "California June Examination" in the passed and failed list of candidates from foreign universities an asterisk after the names of some of them which means "not verified by the American Medical Association." What do you mean by this? What requirements are necessary for the American Medical Association to verify graduation? M.D.

ANSWER.—For graduates of medical schools in the United States and for some medical schools abroad, the American Medical Association has official data by which the graduation of all candidates appearing before state licensing boards is immediately verified. In all reports of state board examinations a statement "graduation not verified" is made in regard to the few instances in which such data are not available. This statement is published without prejudice to the physician concerned, and it is understood that the state licensing board has itself secured directly from the medical school a verification of the candidate's credentials.

TREATMENT OF SCABIES

To the Editor:—Will you kindly publish the formula for the Danish treatment of scabies as used at the Massachusetts General Hospital? M.D.

ANSWER.—This is answered in the article by Arthur M. Greenwood, "The Danish Treatment of Scabies," THE JOURNAL, Feb. 9, 1924, p. 466:

1. One kilogram of sublimed sulphur is mixed with 2 kg. of 50 per cent. solution of potassium hydroxid (as free from water as can be obtained). Gentle heat is applied until reaction ceases and the solution becomes clear. When the process is complete, one should be sure that the sulphur is in excess to a slight degree.
2. Petrolatum, 225 gm., is mixed with wool fat, 225 gm., without heat.
3. To this mixture is added 375 gm. of the solution of sulphur and potash mentioned above.
4. To 40 gm. of 20 per cent. sodium hydroxid solution is added 28 gm. of zinc sulphate. The mixture is agitated thoroughly until reaction ceases, poured on filter paper, and washed thoroughly; then the washed precipitate is added to the foregoing.
5. Liquid petrolatum is added to obtain a total weight of 1,000 gm.
6. Five grams of oil of bitter almond is added to mask the somewhat disagreeable odor of hydrogen sulphid.

The directions for use of the ointment as given in the original article by Lomholt (*Lancet* **2**:1251 [Dec. 18] 1920) and summarized by Greenwood are, briefly, as follows:

The patient receives an ordinary cleansing bath, dries himself thoroughly, and afterward rubs the whole of his body, except his head, carefully with the ointment. The ointment must cover all the skin, but hard

rubbing is neither required nor desirable. The patient ought then to wait for a quarter of an hour to give the ointment time to get into the skin; after this he can go to bed. The next day, at about the same hour, he receives a bath and fresh underclothing, and the treatment is finished. Meanwhile, all his clothes have been disinfected. We have followed these directions in our cases, in addition, insisting on the disinfection of the bedding.

Greenwood says, further, that dermatitis has occurred in patients who have used an ill prepared ointment or have used a good ointment longer than directed. Failures may occur unless directions are followed and unless linen is disinfected and other members of the family are cured of the disease.

VOICE PRODUCTION

To the Editor:—I want to write a paper on "Voice Production." I am interested most particularly in discussing the character of the instrument or instruments which the voice box is like. Could you cite me some articles or reprints on the subject?

J. M. QUICK, M.D., Muncie, Ind.

ANSWER.—The following is a list of references to books on the subject:

Browne, Lennox; and Behnke, Emil: Voice, Song and Speech, pp. 69-74, New York, G. P. Putnam's Sons.
Mills, Wesley: Voice Production in Singing and Speaking, pp. 102, 140, etc., Philadelphia, J. B. Lippincott Company, 1906.
Von Meyer, Georg Hermann: The Organs of Speech, p. 190, New York, D. Appleton & Co., 1884.
Aikin, W. A.: The Voice, p. 89, New York, Longmans Green & Co., 1910.
Howard, John: The Physiology of Artistic Singing, p. 104, etc., Boston, John Howard, 1886.
Voorhees, I. W.: The Hygiene of the Voice, New York, the Macmillan Company, 1923.

PREVENTING NAUSEA FROM MORPHIN

To the Editor:—Is there known to therapeutists anything which may be incorporated with a dose of morphin and atropin to be given hypodermically that may prevent nausea and vomiting following, as is frequently the case? In one instance a specialist gave a dose, so I have been informed, and be told the patient, "I will give something with it to prevent nausea," and nausea in that one instance did not result, although it followed the next dose taken, given by another physician a few days after the one given by the specialist.

JOHN F. CHANDLER, M.D., Oregon, Mo.

ANSWER.—It is stated that the administration of morphin dissolved in 2 c.c. of 50 per cent. sterile magnesium sulphate solution, preferably with the addition of procain, 2.5 per cent., increases the activity of morphin by from 50 to 100 per cent., so that a smaller dose has a more prolonged effect and the disagreeable after-effects are diminished. Scopolamin by its greater psychic effect is probably a better antagonistic to the disagreeable after-effects of morphin than is atropin, as is shown by the well established value of the former in lessening the withdrawal symptoms of the morphinist under treatment. The psychic value of the direct suggestion "I will give something with it to prevent nausea," increased in its potency possibly by the fact that a "specialist" said it, will also have to be considered in this case.

PHENOLSULPHONEPHTHALEIN TEST

To the Editor:—In carrying out the color comparison in the phenolsulphonephthalein test for kidney function, with specimens of urine collected in a cystoscopic examination there is often blood in the specimen. This interferes with an accurate color comparison. If a method for removing blood and hemoglobin from urine has been given in THE JOURNAL would you kindly give me the issue number?

B. F., M.D.

ANSWER.—Sidney C. Burwell and Chester M. Jones, "The Removal of Bile and Blood from the Urine," THE JOURNAL, Aug. 6, 1921, p. 462, write as follows: "Phenolsulphonephthalein solution (1 c.c.) is injected into the deltoid muscle in the usual manner, and the urine collected after the usual interval of two hours and ten minutes. This specimen of urine is diluted up to 500 c.c. with tap water. To 20 c.c. of this diluted urine is added 20 c.c. of a saturated alcoholic solution of zinc acetate, which precipitates out bilirubin and hemoglobin. Red cells are carried down with the precipitate. Filtration yields a clear solution, now free from bile pigments and hemoglobin. Twenty cubic centimeters of this clear filtrate is made alkaline with 5 c.c. of saturated sodium hydroxid solution to bring out the full color of the dye, and made up to 40 c.c. with tap water. This solution is clear and is read directly against a known standard solution of phenolsulphonephthalein. In order to correct for dilution, the percentage reading is multiplied by 2."

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 12. Chairman, Dr. S. W. Welch, Montgomery.
ARIZONA: Phoenix, Jan. 5-6. Sec., Dr. W. O. Sweek, 404 Heard Bldg., Phoenix.
COLORADO: Denver, Jan. 5. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.
DELAWARE: Wilmington, Dec. 8-9-10. Pres. Med. Coun., Dr. Henry W. Briggs, 1026 Jackson St., Wilmington.
DISTRICT OF COLUMBIA: Jan. 12. Sec., Dr. Edgar P. Copeland, Apt. 104, Stoneleigh Court, Washington, D. C.
HAWAII: Honolulu, Jan. 11. Sec., Dr. G. C. Milnor, 401 So. Beretania St., Honolulu.
IDIANA: Indianapolis, Jan. 12. Sec., Dr. W. T. Gott, 421 State House, Indianapolis.
KENTUCKY: Louisville, Dec. 8-10. Sec., Dr. A. T. McCormack, 532 W. Main St., Louisville.
LOUISIANA: New Orleans, Dec. 10-12. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bank Bldg., New Orleans.
MARYLAND: Baltimore, Dec. 8-11. Sec., Reg. Bd., Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore, Sec., Homeo. Bd., Dr. J. S. Garrison, 517 Old Orchard Rd., Baltimore.
MINNESOTA: Minneapolis, Jan. 5-7. Sec., Dr. Thomas S. McDavitt, 734 Lowry Bldg., St. Paul.
NORTH DAKOTA: Grand Forks, Jan. 5. Sec., Dr. George M. Williamson, Grand Forks.
OHIO: Columbus, Dec. 2-4. Sec., Dr. H. M. Platter, Hartman Hotel Bldg., Columbus.
OREGON: Portland, Jan. 5-7. Sec., Dr. N. C. Coe, 1208 Stevens Bldg., Portland.
RHODE ISLAND: Providence, Jan. 7. Sec., Dr. Byron U. Richards, State House, Providence.
UTAH: Salt Lake City, Jan. 5. Director of Reg., Mr. J. T. Hammond, 412 State Capitol Bldg., Salt Lake City.
VIRGINIA: Richmond, Dec. 8-11. Sec., Dr. J. W. Preston, 720 Shenandoah Life Bldg., Roanoke.
WASHINGTON: Olympia, Jan. 12. Sec., Mr. William Melville, 15 Insurance Bldg., Olympia.
WISCONSIN: Madison, Jan. 12-14. Sec., Dr. Robert E. Flynn, 315 State Bank Bldg., La Crosse.
WISCONSIN: Milwaukee, *Basic Sciences*, Dec. 18-19. Sec., M. F. Guyer, Madison.

Missouri June Examination

Dr. James Stewart, secretary of the board of health of Missouri, reports the written and practical examination held at St. Louis, June 23-26, 1925. The examination covered 14 subjects and included 123 questions. An average of 70 per cent. was required to pass. Of the 124 candidates examined, 115 passed and 9 failed. The following colleges were represented:

PASSED College	Year Grad.	Number Passed
Northwestern University Medical School	(1922) (1925)	2
Loyola University School of Medicine	(1918)	1
College of Physicians and Surgeons, Keokuk	(1897)	1
University of Kansas School of Medicine	(1910)	1
Johns Hopkins Univ. Med. Department	(1918) (1921)	2
Harvard University	(1922)	1
St. Louis University School of Medicine	(1925)	55
Washington University School of Medicine	(1925)	45
Hahnemann Med. Coll. and Hosp. of Philadelphia	(1923)	1
Univ. of Pa. School of Medicine	(1924) (1925, 2)	3
Meharry Medical College	(1925)	2
Marquette University School of Medicine	(1922)	1

FAILED College	Year Grad.	Number Failed
College of Physicians and Surgeons, Chicago	(1910)	1
St. Louis University School of Medicine	(1925)	4
Washington University School of Medicine	(1925)	3
Ohio Medical University, Columbus	(1903)	1

Tennessee June Examination

Dr. Alfred B. DeLoach, secretary of the Tennessee Board of Medical Examiners, reports the written examination held at Memphis, Nashville and Knoxville, June 12-13, 1925. The examination covered 8 subjects and included 64 questions. An average of 75 per cent. was required to pass. One hundred and nineteen candidates were examined, all of whom passed. The following colleges were represented:

PASSED College	Year Grad.	Per Cent.
Tulane University of Louisiana School of Medicine	(1925)	81.3, 84
Johns Hopkins University	(1911)	87.9
St. Louis College of Physicians and Surgeons	(1923)	82.9, 88.1
University of Nebraska College of Medicine	(1925)	80.5
Columbia Univ. College of Phys. and Surgs.	(1925)	85.8
Jefferson Medical College of Philadelphia	(1925)	86.4
Meharry Medical College	(1925)	78.8

79, 82, 82.3, 82.8, 83, 83.8, 83.9, 83.9, 84.4, 84.5, 84.6, 84.8, 85.3, 85.6, 85.8, 85.9, 86.1, 86.5, 89

Nashville Medical College.....(1901) 75
University of Tennessee College of Medicine.....(1925) 78.1
78.6, 79.5, 79.5, 79.6, 81.5, 81.5, 81.9, 82.5, 82.8, 82.8, 82.8, 83.1, 83.4, 83.5, 83.5, 83.5, 83.5, 83.8, 83.9, 84, 84.1, 84.3, 84.4, 84.6, 84.8, 84.8, 84.8, 84.9, 84.9, 84.9, 85, 85, 85.1, 85.4, 85.5, 86.1, 86.1, 86.3, 86.6, 86.9, 86.9, 86.9, 87.5, 87.6, 88.4, 88.6, 88.8, 89.5, 89.6, 90.6
Vanderbilt University School of Medicine.....(1925) 81.6
82.5, 83.1, 83.1, 83.1, 83.1, 84.3, 84.8, 85, 85.1, 85.5, 85.6, 85.8, 85.9, 86, 86.1, 86.3, 86.3, 86.4, 86.4, 86.8, 86.8, 87.4, 87.5, 87.6, 87.6, 87.6, 87.6, 88, 88.1, 88.1, 88.4, 88.8, 88.9, 89.6, 89.6, 90.4, 91.8, 93

Oklahoma April Reciprocity Report

Dr. James M. Byrum, secretary, Oklahoma Board of Medical Examiners, reports that 4 candidates were licensed by reciprocity and 4 candidates were granted reregistration certificates at the meeting held at Oklahoma City, April 14, 1925. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Tulane University	(1915),	(1923)	Louisiana
Eclectic Medical University, Kansas City	(1911)		Arkansas
University of Texas	(1915)		Texas

Book Notices

ALCOHOL IN MEDICAL PRACTICE. With a Chapter on the Evolution of Medical Opinion. By Courtenay C. Weeks, M.R.C.S., L.R.C.P. Cloth. Price, 3 shillings 6 pence, net. Pp. 186. London: H. K. Lewis & Co., Ltd., 1925.

The author's extensive compilation of statistics on expenditures for liquor in British hospitals shows a marked reduction in the use of wines and spirits in the treatment of patients throughout the empire in every class of hospital. The figures also reveal the capricious way in which alcohol is ordered, some hospitals using but very little, and others taking care of the same class of cases using a considerable amount. These contrasts seem to "point to the fact that much of the prescribing of alcohol is based on caprice, idiosyncrasy and unscientific predilection of the responsible medical staff, rather than on great general principles." The author objects to the use of the word stimulant in connection with alcoholic beverages, because they are narcotics and not stimulants. Especially pernicious does the author consider the use made of alcohol in circulatory diseases and depression, in view of the fact that, excepting for the brief period of reflex stimulation, it is a depressant to the circulation rather than a stimulant. Indeed, he sees no clear cut indications whatever for the use of alcohol in medicine, and believes that, in view of the disastrous effect on society of the abuse of alcohol, physicians in eschewing its use in their practice plant their feet firmly on both moral and scientific foundations.

DIE PRAXIS DER NIERENKRANKHEITEN. Von Prof. Dr. L. Lichtwitz, Aerztl. Direktor am Städt. Krankenhaus Altona. Fachbücher für Aerzte, Band VIII. Second edition. Cloth. Price, 15 goldmarks. Pp. 315, with 39 illustrations. Berlin: Julius Springer, 1925.

The lack of uniformity in nomenclature and classification constitutes a great difficulty in the clear understanding of the subject of diseases of the kidney. Since the time of Müller, who first introduced the term nephrosis, by which name tubular disease of the kidney was differentiated from glomerular disease, or nephritis, there has been a constant stream of additions of names and classifications. The name nephrosis and its varieties seem to be fairly well defined, but the controversy is still unsettled in the matter of nephritis and the mixed forms. For example, Lichtwitz prefers the term essential hypertension to that of Volhard, nephrosclerosis. There are many other diverging paths. It seems that the comparatively simple classification of Volhard and Fahr would be more acceptable than the longer one of Lichtwitz. The latter also includes orthostatic albuminuria, the kidney of passive congestion, and congenital lesions of the kidney in his table. Controversies, arising from an attempt to separate true nephrosis and nephritis of bacterial origin, and to determine whether vascular or tubular processes are primary in chronic conditions, are the cause of a good deal of academic discussion and waste of time and space in a monograph that is intended for the practitioner. To enumerate the differences of opinion between Volhard and the author would take many pages and would lead nowhere. The descriptions of such subjects as albuminuria, hematuria, edema, anuria, acute nephroses and nephritis, the various chronic nephritides and the use of diuretics are complete and excellent. Treatment is given in detail. A few points of interest might be mentioned: The author believes that the amount of albumin is no index of the extent of the renal lesion and that granular casts always indicate a severe degenerative lesion. This statement is open to debate. The functional tests of choice are the water tests, the determination of renal concentration power by the use of sodium chlorid and urea, and the determination of uric acid and urea in the blood. The objection to laying too great stress on the latter rests in the lack of knowledge as to how much of these bodies is retained in the tissues. No mention is made of the dye test, blood phosphates and guanidin. The thirst and hunger days of Volhard are used in the treatment of edema, and the methods espoused by von Noorden are given favorable comment. Of the diuretics, which he uses only occasionally, he gives favorable mention to novasural, in edema of cardiac decompensation; theobromin sodiosalicylate, because, in his opinion, of its direct action on the kidney; digitalis, and in some cases, thyroid extract. Dietary and physical methods, such as warm baths in preference to sweats, as recommended by Volhard, and light massage, are the first considerations. Great stress is laid on the use of sodium chlorid, as the ability to excrete this substance is one of the guideposts of treatment. He agrees with A. A. Epstein in advocating a high protein diet in the nephroses, and he allows moderate amounts, without eliminating meat entirely, in the chronic nephritides. Innumerable references, although the actual references are not given, are made to various authors. An English translation with the elimination of academic discussions should be of value to American physicians.

DEVELOPMENT OF OUR KNOWLEDGE OF TUBERCULOSIS. By Lawrence F. Flick, M.D., LL.D. Cloth. Price, $7.50. Pp. 783. Philadelphia: The Author, 1925.

A survey of Dr. Flick's book suggests the subtitle "Medical History Made Easy"; the book is not a treatise on the historical development of tuberculosis, but a compilation of extensive translations and quotations from the writings of those men whose works are the milestones in this development. There are well chosen and complete quotations from Hippocrates, Galen and Aretaeus, from Sylvius, Morton, Bayle, Auenbrugger and Laënnec, from Villemin, Virchow and Koch. And the *dei minores*, too, are duly considered. Dr. Flick did not use the original Greek and Latin texts of the older writers, but the translations of Littré, Milligan, Kuhn and others. The author's own text, which connects the quotations, is scanty and not sufficient to convey a vivid picture of the historical development or of personalities and conditions. The comparative importance of the various authors is not emphasized except by the length of the abstracts. Consideration of investigations along lines closely connected with the subject of the treatise is missed throughout. The reactions that the all important investigations of Villemin and Koch created within their contemporaries are not adequately discussed. The book ends with the Sixth International Congress on Tuberculosis in Washington, in 1908. The period from 1884 is not well covered; the selection of material is highly subjective; names of prime importance are barely mentioned, whereas work of secondary significance is abstracted. Social agencies in the campaign against tuberculosis, the modern clinical investigations, artificial pneumothorax and the roentgen ray are not touched on at all. The institutional care of the tuberculous is, as it were, read by title. The period of the last twenty-five years is treated with much less care than the medieval times of grotesque therapeutics and bizarre theories.

CONDUCTION, INFILTRATION AND GENERAL ANESTHESIA IN DENTISTRY. By Mendel Nevin, D.D.S., Oral Surgeon, Greenpoint Hospital, and P. G. Puterbaugh, M.D., D.D.S., F.A.C.D., Professor of Principles of Medicine and Anesthetics, Chicago College of Dental Surgery. Second edition. Cloth. Price, $6. Pp. 360, with 210 illustrations. Brooklyn: Dental Items of Interest Publishing Company, 1924.

This work is the same as that on "Conduction and Infiltration Anesthesia in Dentistry" by Nevin, reviewed in these columns a short time ago, to which has been added about thirty pages dealing with general anesthesia and analgesia as applied to dentistry by Puterbaugh, thus completing the general subject of anesthesia in dentistry.

DIE UNEHELICHE MUTTERSCHAFT. Eine sozial-gynäkologische Studie, zugleich ein Beitrag zum Problem der Fruchtabtreibung. Von Dr. Egon Weinzierl, 1. Assistent der deutschen Universitätsfrauenklinik in Prag. Paper. Price 4,20 marks. Pp. 79, with 14 illustrations. Berlin: Urban & Schwarzenberg, 1925.

Weinzierl views with anxiety the increasing incidence of criminal abortion in his part of the world, and adduces the results of a study of 500 cases of abortion which were treated in Wagner's clinic in Prague. The number of cases of abortion, from 1917 to 1923, totaled 3,038; i. e., one third of all admissions to the clinic. The situation is considered a great danger to the state, and, in fact, has reached the dignity of being a national problem. Previous to the war, the subject had received more or less attention, but since the armistice, the matter has become more urgent because of the increase in the number of abortions. The causes are largely economic: high living costs, poverty, unemployment and the psychology of the postwar period. The author recites that Soviet Russia has displayed leniency toward women who avoid maternity by illegal interruption of their pregnancies. This tendency on the part of the Soviet government has affected several of the neighboring states, so that the idea has become prevalent that women may resort to abortion without fearing prosecution; the abortionist likewise expects immunity. While the work presents nothing new to the student of economics or eugenics, the pamphlet is an interesting one. The picture of conditions obtaining among the forlorn women studied is a melancholy one; destitution and ignorance, betrayal and abandonment, all are ancient factors accompanying the evil. Weinzierl points out that the woman far advanced in her pregnancy is usually cared for in maternity hospitals, but no attention is given her in the early months of gestation. The early period, he states, is the dangerous one; it is the time when the unfortunate girl, not yet awake to the instincts of motherhood, resorts to the abortionist, or takes her own life; it is the period of desperation and greatest unhappiness. As a remedy, Weinzierl suggests the compulsory reporting of all pregnancies. He would appoint a curator for each woman, who should serve as adviser and protector, who should care for the child to the extent of seeing that it is properly housed and cared for, and who should see that the man responsible for the pregnancy is compelled to contribute to the support of mother and child. This suggestion is interesting, but, we fear, utterly impracticable. Further, he suggests that in the case of married women, the curator should be the husband; as the husband too often demands the abortion, this suggestion is hardly tenable. In all cases of contemplated abortion, the patient should be referred to a court consisting of medical, legal and sociological members; this court should pass on the propriety of the proposed step. Weinzierl would allow interruption for tuberculosis, syphilis, idiocy, epilepsy and heart disease; also, when conception follows a criminal attack. The author recommends that all illegitimate children should be institutionalized in view of the high mortality obtaining among such infants removed from the maternity hospital by the mother. Ignorance and neglect are responsible for the deaths. The results obtained under the operation of the "six months' law" in Maryland strongly refute the author's contention on this point. This law forbids the separation of the mother and her child for the first six months of the infant's life. Before the enactment of this law, one in four illegitimate infants died; since then one in twelve has died within the six month period. Weinzierl has written a very interesting and instructive monograph on phases of illegitimacy, which will be of value to the physician and the sociologist.

Medicolegal

Restrictions on Physicians of Prohibition Acts

(Lambert v. Yellowley et al. (U. S.), 4 Fed. R. (2d) 915)

The United States Circuit Court of Appeals, Second Circuit, in upholding the validity of the national prohibition acts as they affect the right of a medical practitioner to prescribe spiritous or vinous liquors in the treatment of disease, says that the fact may be noted that whether or not whisky, wine or beer has a therapeutic value in the treatment of disease is a very much disputed question in the medical profession. In 1917 the American Medical Association, which has a membership of 150,000 physicians, passed a resolution, discouraging the use of alcohol as a therapeutic agent (which resolution is quoted in a footnote to the court's opinion). It is impossible for the court to say as a matter of law that the limitation placed on physicians in prescribing liquor as a remedy for disease is not fairly adapted to the end of protecting the people of the United States against the evils which result from the use of intoxicating liquors. It was for Congress, and not the courts, to determine whether it was necessary or advisable to permit these liquors to be prescribed at all by physicians, and, if to be prescribed, to fix the quantity that may be prescribed at any one time or within a fixed period. A person has an inherent right to life, and in order to maintain it a right to eat and drink. But the right to drink liquors which are intoxicating, the state or the United States may take away, and in order to do so effectively the government may take away the right to drink certain liquors containing alcohol sufficient in amount to produce intoxication. That much is settled by the decisions of the courts; and for the same reason which leads the law-making power of a state or of the United States to prohibit the use of liquor containing a less amount of alcohol than is required to make it intoxicating, the law-making power may restrict the physician as to the amount of such liquor he can prescribe to his patient in a given period. The court cannot say that a physician's right to prescribe alcohol in the treatment of disease is inherent, and cannot be regulated or controlled by the law-making power of the state. The proposition is unsupported by authority and is unsound in principle.

Detention in Hospital for Unpaid Bill

(Gadsden General Hospital v. Hamilton (Ala.), 103 So. R. 553)

The Supreme Court of Alabama says that plaintiff Hamilton had been in the defendant's hospital for about three weeks, during which time she had undergone an operation for exophthalmic goiter. At the end of that period she desired to go home, but was told that she could not leave the hospital until her bill was paid. Under these conditions and in this manner she was detained from 9 a. m. until about 8 p. m. of the same day, when she was sent home in charge of a nurse. The overwhelming weight of the evidence was that no threat was made; that the plaintiff was not locked in her room, and suffered no wrong or indignity, except that she was told she could not leave until her bill was paid; that she passed the period of her detention quietly on her bed in her room, the door of which was open, she being detained—as the jury found, and as it was authorized to find under the evidence—merely by force of the defendant's command that she should not go until her bill was paid. That the plaintiff suffered a wrong for which she should be compensated must, in the circumstances, be conceded. But the jury acquitted the defendant of malice. The plaintiff's wrong, then, must be referred to the defendant's misapprehension of the propriety and the right of the situation presented—at least malice could not be predicated of what it did. It could not be doubted that the plaintiff was sick and nervous at the time of her detention, and this fact was due to be taken into consideration in the assessment of compensatory damages; but the court feels assured, on consideration of the expert medical testimony, that the nervousness, the excitement when at work, and the "nightmares" from

which she suffered after her return home, were the result of her disease, not of any violence or the wrong done by the defendant or its agents. She recovered a judgment for damages, the amount of which is not stated by the supreme court, but which it holds was excessive, attributable to the jury's mistaken estimate of the proprieties of the case. In these circumstances, the court holds that the damages should be reduced to a reasonable maximum, which it places at $1,500, with interest added from the date of the judgment.

Requirement of Physician's Certificate Reasonable

(Home Beneficial Ass'n. v. Lomax (D. C.), 4 Fed. R. (2d) 292)

The Court of Appeals of the District of Columbia says it appeared that plaintiff Lomax held an insurance policy which provided that the stipulated benefit should commence from the date when the physician's written notice of the prescribed disability, given on forms provided by the association, was received at the office of the association; that as evidence of the association's liability for weekly benefits it required a physician's certificate on its own blanks at the end of each week of incapacity. For a short period the plaintiff was under the charge of a physician, who furnished a certificate on which the plaintiff recovered the benefits allowed him under the policy. But shortly thereafter he had a relapse, when, it was alleged, he was disabled from the performance of his duties, and was confined to his home, but was not under the supervision of a physician. On recovering from his indisposition, he notified the association, which refused payment. It was contended that the provision of the policy was applicable only when there was an attending physician; that, in the absence of an attending physician, the notice might be given by the insured, as was done in this case. But the court thinks that the contract would not admit of that construction. The requirement of a physician's certificate in all cases was not an unreasonable one. It was for the protection of the association against being defrauded, and the language of the contract was sufficiently clear to require such a certificate in every instance. The plaintiff was presumed to know and understand the terms and conditions of the contract, and was chargeable with any damage he might sustain as the result of his failure to comply with those conditions. The court thinks, therefore, that the terms of the contract in this particular were sufficiently clear and express to require its strict enforcement.

Opium an Illegitimate Commodity

(Yee Hem v. United States (U. S.), 45 Sup. Ct. R. 470)

The Supreme Court of the United States, in affirming a judgment of conviction of defendant Yee Hem of the offense of concealing a quantity of smoking opium after importation, with knowledge that it had been imported in violation of the Act of 1909 as amended in 1914, says that the authority of Congress to prohibit the importation of opium in any form and, as a measure reasonably calculated to aid in the enforcement of the prohibition, to make its concealment with knowledge of its unlawful importation a criminal offense, is not open to doubt. By universal sentiment, and settled policy as evidenced by state and local legislation for more than half a century, opium is an illegitimate commodity, the use of which, except as a medicinal agent, is rigidly condemned. Legitimate possession, unless for medicinal use, is so highly improbable that to say to any person who obtains the outlawed commodity, "since you are bound to know that it cannot be brought into this country at all, except under regulation for medicinal use, you must at your peril ascertain and be prepared to show facts and circumstances which rebut, or tend to rebut, the natural inference of unlawful importation, or your knowledge of it," is not such an unreasonable requirement as to cause it to fall outside the constitutional power of Congress. Every accused person, of course, enters on his trial with the presumption of innocence. But that presumption may be overcome, not only by direct proof, but, in many cases, when the facts standing alone are not enough, by the additional weight of a countervailing legislative presumption. The point that the practical effect of the statute creating the presumption is to compel the accused person to be a witness against himself may be put aside with slight discussion. The statute compels nothing. It does no more than to make possession of the prohibited article prima facie evidence of guilt. It leaves the accused entirely free to testify or not as he chooses.

No Duty to Provide Treatment But Must Pay for It

(Koviacs v. Edison Portland Cement Co. (N. J.), 128 Atl. R. 542)

The Supreme Court of New Jersey says the complaint stated that, owing to the negligence of the defendant, the pumps in its quarry where the plaintiff worked did not function, and, as a result of his working in water of from one to two feet deep and of a character dangerous to health, he became ill and one of his legs became diseased so that an amputation was necessary. Another paragraph of the complaint alleged that, although the defendant was well aware of the sick and diseased condition of the plaintiff, the defendant carelessly and negligently failed to provide him with any medical assistance or other means of being cured. The defendant moved to have that paragraph stricken out, and its motion is granted. In a common-law action for negligence such as this, although an employer must answer to an employee in damages for all loss proximately resulting, including physicians' and surgeons' charges, yet in the absence of contract, there is no duty on the part of an employer to provide medical assistance or other means of being cured to an ill and diseased employee, even though the illness or disease arose from the negligence of the employer.

The Ear Not a "Member" of the Human Body

(Travelers' Ins. Co. v. Albin (Ga.), 127 S. E. R. 804)

The Court of Appeals of Georgia, Division No. 1, in reversing a judgment which affirmed an award, by the industrial commission, of compensation for the loss of hearing of one ear, says that it was insisted that the ear is a member of the human body, and that the employee who had lost the hearing of one ear was entitled to recover compensation under Section 32 (r) of the workmen's compensation act of Georgia, which section provides for the "loss of a member" and "for partial loss of, or for partial loss of use of, a member." This court cannot agree with that contention. Even if the loss of hearing in one ear could be considered the loss of an ear, the word "member" does not, in contemplation of the statute referred to, embrace the ear. Consequently the injured employee could not recover for the loss of, or partial loss of, the use of an ear as a "member."

Society Proceedings

COMING MEETINGS

American Pharmacological Society, Cleveland, Dec. 28-31. Dr. E. D. Brown, University of Minnesota, Minneapolis, Minn., Secretary.
American Physiological Society, Cleveland, Dec. 29-31. Dr. W. J. Meek, Science Hall, Madison, Wis., Secretary.
American Society for Experimental Pathology, Cleveland, Dec. 28-30. Dr. E. B. Krumbhaar, Philadelphia General Hospital, Philadelphia, Sec'y.
American Society of Biological Chemistry, Cleveland, Dec. 28-30. Dr. D. W. Wilson, University of Pennsylvania School of Medicine, Philadelphia, Secretary.
District of Columbia, Medical Society of, Washington, D. C., Dec. 2. Dr. C. B. Conklin, 500 Medical Science Bldg., Washington, D. C., Sec'y.
Federation of American Societies for Experimental Biology, Cleveland, Dec. 29-31. Dr. Walter J. Meek, Science Hall, Madison, Wis., Sec'y.
Isthmian Canal Zone, Medical Association of, Ancon, Jan. 19. Dr. David L. Robeson, Ancon Hospital, Ancon, Secretary.
Philippine Islands Medical Association, Manila, Dec. 16-19. Dr. Isabelo Concepcion, College of Medicine and Surgery, Manila, Secretary.
Porto Rico, Medical Association of, Coami, Dec. 14-15. Dr. R. M. Suarez, Box 314, Santurce, Secretary.
Radiological Society of North America, Cleveland, Dec. 7-11. Dr. Robert J. May, St. Luke's Hospital, Cleveland, Secretary.
Society of American Bacteriologists, Madison, Wis., Dec. 29-31. Dr. James M. Sherman, Cornell University, Ithaca, N. Y., Secretary.
Southern Surgical Association, Louisville, Ky., Dec. 15-17. Dr. Hubert A. Royster, 423 Fayetteville Street, Raleigh, N. C., Secretary.
Western Surgical Association, Wichita, Kan., Dec. 18-19. Dr. Harry P. Ritchie, Lowry Building, St. Paul, Minn., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL for a period of three days. No foreign journals are available prior to 1920, nor domestic prior to 1923. Periodicals published by the American Medical Association are not available for lending, but may be supplied on order. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

Archives of Internal Medicine, Chicago

36: 447-592 (Oct. 15) 1925

*Blood and Symptomatic Changes Following Intravenous Administration of Variety of Agents and Solutions. P. J. Hanzlik, F. De Eds and M. L. Tainter, San Francisco.—p. 447.

Lipoid Partition in Blood in Health and in Disease. B. L. Oser and W. G. Karr, Philadelphia.—p. 507.

*Congenital Intracardiac Fistulas. E. Holman, Cleveland.—p. 516.

*Use of Urea as Diuretic in Advanced Heart Failure. J. H. Crawford and J. F. McIntosh, New York.—p. 530.

*Diseases of Liver. IV. Functional Tests in Cases of Carcinoma of Liver and Biliary Tract. C. H. Greene, C. S. McVicar, W. Walters and L. G. Rowntree, Rochester, Minn.—p. 542.

*Nutritional Changes in Exophthalmic Goiter. C. C. Sturgis and J. A. Greene, Boston.—p. 561.

*Glycemia as Guide in Treatment of Diabetes Mellitus. W. H. Nadler and G. Tukey, Chicago.—p. 579.

*Pancreatic Function. I. Quantitative Determination of Pancreatic Enzymes. E. Hollander and J. M. Marcus, New York.—p. 585.

Blood Changes Incident to Intravenous Injections.—This study by Hanzlik et al. showed that intravenous injections, in dogs, of small and large doses of the following agents and solutions caused definite and important changes in arterial blood, accompanied, as a rule, by disturbances in physiologic functions: 10 per cent. sodium chlorid solution, 85 per cent. sucrose solution, 50 per cent. dextrose solution, 18 per cent. urea solution, 0.1 per cent. agar solution, 6 per cent. and 25 per cent. acacia solution, 5 per cent. gelatin solution, 3 per cent. barium sulphate suspension, 0.5 per cent. fullers' earth suspension, 5 per cent. copper sulphate solution, 9 per cent. calcium chlorid solution, 21.7 per cent. sodium iodid solution, 50 per cent. sodium salicylate solution, 0.33 per cent. arsphenamin solution and 5 per cent. peptone solution.

Congenital Intracardiac Fistulas.—In studies on peripheral arteriovenous fistula and on the patent ductus arteriosus, a very intimate interrelationship between increased minute volume flow and cardiac enlargement was demonstrated by Holman. Additional corroborative information as to this interrelationship was obtained from a study of such developmental anomalies of the heart as accompany patent interventicular septum, patent foramen ovale, cor triloculare, and the associated abnormalities of pulmonary and aortic stenosis. In the presence of these intracardiac fistulas, the volume flow of blood through the heart is unequally distributed among the several chambers, and, theoretically, the developmental response in these chambers should be commensurate with the volume flow through them. Clinical evidence in favor of this view is provided by ten cases of congenital anomalies of the heart recorded in the literature.

Urea as Diuretic in Advanced Heart Failure.—Crawford and McIntosh gave urea in doses of from 30 to 60 gm. a day to eight patients with advanced heart failure; it was followed by a marked increase in urine volume. The drug was particularly useful in cases in which an adequate water excretion was not maintained after the edema fluid had been removed by other measures. In some cases it relieved the edema when other remedies had failed. The increase in urine output varied with the dose and followed closely the curve of urea excretion. With continuous administration, the daily urine volume was maintained at an almost constant level. The response after administration was rapid, but the effect passed off in a short time unless the dose was repeated. The changes in urine volume and in urea excretion were dependent on the concentration of the urea in the blood. In several of the cases there was a subnormal index of urea excretion which seemed ascribable to advanced heart failure. The index tended to improve with urea administration, along with a general improvement in the clinical condition. Toxic symptoms of any significance did not take place. From these observations it is suggested that urea is a useful diuretic in cases of heart failure with edema, in which treatment of the cardiac condition has failed to remove the edema or maintain an adequate water excretion.

Liver Function Tests in Liver Carcinoma.—The determination of the serum bilirubin and the phenoltetrachlorphthalein test, Greene et al. are convinced, promises to be of very definite assistance in the study of patients with abdominal carcinoma and suspected malignant disease of the liver. When extension of the malignant process to the liver is accompanied by jaundice, as from obstruction of the extrahepatic bile passages, it is direct evidence of a disturbance in the normal physiologic activity of the liver. In such cases functional tests and the determination of the serum bilirubin are of value in that they furnish a sensitive and quantitative means of studying the effects of the jaundice. The tests are of less value in differential diagnosis, for the jaundice dominates both the clinical picture and the laboratory findings. The jaundice associated with malignant disease in the liver is not to be differentiated by these tests from obstructive jaundice from any cause. It is in the study of patients with carcinoma involving the liver without jaundice that functional tests are of greatest value, particularly the phenoltetrachlorphthalein test. In the cases in which there was clinical evidence of malignant disease of the liver, confirmatory results were obtained by functional studies. In the absence of clinical evidence of hepatic involvement, the phenoltetrachlorphthalein test may furnish the only evidence of the existence of metastatic nodules in the liver. Positive tests are not obtained in all cases of metastatic involvement of the liver, for positive tests are a measure of the interference with the activity of the liver as a whole, and the latter is an organ with a large margin of safety. For this reason, however, positive tests when obtained become doubly significant.

Nutritional Changes in Exophthalmic Goiter.—The relation between the food intake, basal metabolism and body weight in patients with exophthalmic goiter is emphasized by Sturgis and Greene. From present observations, which are in accord with those made previously, it is concluded that in order to maintain body weight while resting in bed, the food intake in a patient with exophthalmic goiter and an elevated metabolism must be at least from 75 to 100 per cent. greater than the basal metabolism. A study of the histories of sixty-five patients with exophthalmic goiter indicated that although 88.5 per cent. of them had an appetite which was classified as ravenous, increased or normal, yet 86.5 per cent. of these patients gave a history of a loss of 11.9 kg. of body weight in 11.9 months. A comparison of the body weight of these sixty-five patients with the standard weight tables shows that 80.2 per cent. averaged 18.2 per cent. below normal when they first appeared at the hospital. A study of the alteration in body weight following operation in thirty-six patients who had not been treated with compound solution of iodin and therefore were operated on with an elevated metabolism averaging + 39, showed that all except one, in whom the weight was unchanged, lost an average of 5.2 per cent. of their preoperative body weight in an average of eleven days after the operation. The factors responsible for this loss of weight might be several, but it was concluded that the most important was the combination of the inability of the patient to consume normal quantities of food and the elevated metabolism, which may remain high for a period of ten days or longer following thyroidectomy. A second group of twenty-eight patients, who had been treated with compound solution of iodin and in whom the metabolism was reduced to an average of + 21 before the operation, was studied. Of these patients, 18 per cent. had actually gained weight by the tenth postoperative day, and the loss of weight for the entire group averaged only 2 per cent. This loss is even less than the average decrease in body weight following operation in a group of twenty-five patients with colloid goiters and nontoxic adenomas.

Glycemia Guide to Treatment in Diabetes Mellitus.—The practicability of routine examination of small, effectively preserved specimens of blood drawn by the patient is discussed by Nadler and Tukey. It is asserted that patients can be taught to collect from their fingers and bring or mail to the laboratory a few drops (about 0.2 c.c.) of blood which is effectively preserved and kept from clotting by a mixture of sodium fluorid and thymol recommended by Sander (5 mg. of sodium fluorid and 1 mg. of thymol are used). Estimations of sugar, accurate for clinical purposes, can be made at a convenient time with the micromodification of the Folin-Wu method described by Randles and Grigg.

Quantitative Determination of Pancreatic Enzymes.—Present clinical methods for the quantitative determination of pancreatic ferments are based on the determination of the amount of enzymatic activity obtained at the end of a fixed interval of time (from one to twenty-four hours). Hollander and Marcus have applied the "time law" of Hedin in a simple manner that can be employed in quantitative tests for these ferments.

Archives of Ophthalmology, New York

104: 531-625 (Nov.) 1925

Vision in Light of Reduced Intensity. C. Edmund and H. U. Möller, Copenhagen.—p. 531.
Treatment of Tabetic Optic Atrophy. E. L. Zimmermann, Baltimore.—p. 545.
Subnormal Accommodation. A. Duane, New York.—p. 566.
Experiences of the Central Area of Descemet's Membrane. D. B. Kirby, New York.—p. 588.
Dacryops; Three Cases. O. Landman, Toledo, Ohio.—p. 592.

Boston Medical and Surgical Journal

193: 807-856 (Oct. 29) 1925

*Measurement of Gaseous Metabolism of Humans. F. G. Benedict, Boston.—p. 807.
Teaching in Outpatient Clinics. H. C. Stuart, Boston.—p. 833.
Uterine Rupture at Term After Previous Cesarean Operation. R. J. Hefferman, Boston.—p. 835.

Measurement of Gaseous Metabolism.—A modified form of the Benedict-Collins respiration apparatus with external blower and soda-lime container and with the spirometer not in the direct circulation of air is recommended by Benedict for most exact physiologic experimenting. A small, modified form of the student respiration apparatus, light enough in weight to be carried easily in the hand, has been developed for use chiefly in walking experiments, although control tests have proved that it also measures the metabolism accurately under conditions of rest. An air pump is employed with this apparatus to meter the oxygen absorbed. For experiments involving rather severe work, this apparatus has been placed on a light-weight knapsack and is attached to the back. The air pump in this case is replaced by two basketball bladders filled with oxygen. Another modified form of the student apparatus permits the measurement of the metabolism during continuous, severe stationary work. The long experience of the nutrition laboratory in the use of both closed-circuit apparatus and the development of the Carpenter gas-analysis apparatus has led to the use of an open-circuit arrangement for the ventilation of respiration chambers. A calorimetric chamber with the open-circuit arrangement is at present being employed very successfully for simultaneous measurements of the carbon-dioxid production, the oxygen consumption, the heat production, and the water vaporized. The open-circuit arrangement has the advantage of permitting easy and quick closure of the chamber, with complete disregard of the matter of leaks. All of these modified types of apparatus have been proved to be accurate, in alcohol check tests with a mechanicochemical device.

Colorado Medicine, Denver

22: 364-412 (Nov.) 1925

Historical Sketch of Medical Department of University of Colorado. H. Sewall, Denver.—p. 364.
Relation of Diseases of Skin to Metabolism. H. P. Towle, Boston.—p. 380.
Fractures of Neck of Femur Treated by Whitman Abduction Method. F. Jones, Denver.—p. 389.
Progress in Obstetrics During Last Twenty Years. F. H. Cary, Denver.—p. 401.

Florida Medical Association Journal, Jacksonville

12: 93-122 (Oct.) 1925

Rupture of Liver; Case. G. E. W. Hardy, Jr., Tampa.—p. 94.
Case of Imperforate Hymen Resulting in Retention of Menstrual Fluid and Urine. H. E. Palmer, Tallahassee.—p. 99.
Therapeutic Action of Sun. W. W. and O. B. McKibben, Miami.—p. 101.
Magnesium Sulphate in Eclampsia. A. D. Stollenwerck, Jacksonville.—p. 105.
Observations on Visit to European Medical Centers. E. Jelks, Jacksonville.—p. 106.
Typhoid Fever. S. L. Keffrey, Coconut Grove.—p. 108.

Johns Hopkins Hospital Bulletin, Baltimore

37: 217-284 (Oct.) 1925

*Blood Glucose Curve in Head Injuries. E. C. Davidson and C. I. Allen, Detroit.—p. 217.
*Rôle of Monocyte in Tuberculosis. R. S. Cunningham, F. R. Sabin, S. Sugiyama and J. A. Kindwall, Baltimore.—p. 231.
Viscometric Method for Quantitative Determination of Annylase. W. C. Davison.—p. 281.

Blood Glucose Curve in Head Injuries.—The data presented by Davidson and Allen show clearly that such head injuries as fracture of the skull and concussion of the brain are followed by a profound though temporary derangement of carbohydrate metabolism. While the exact nature of this disturbance has not as yet been definitely ascertained, it seems reasonable to assume that the same mechanism is involved as in the well known sugar-puncture reaction of Claude Bernard. The blood sugar curve following the intravenous injection of 25 gm. of glucose was determined in fifteen normal persons, as well as in twelve cases of concussion of the brain, and in eighteen cases of fracture of the skull. The average fasting blood sugar in concussion of the brain and fractured skull was found to be within normal limits. The average blood sugar at the end of fifteen minutes was much higher in persons with concussion of the brain than in normal persons and the blood glucose curve fell to the fasting level much more slowly. The fifteen minute blood sugar values in patients with fractured skull showed elevations higher even than those seen in concussion, and the fall of the curve to the fasting level was still more delayed. Subsequent observations on both types of head injury during late convalescence revealed curves quite like those obtained in the control cases and gave no support to the opinion of the traumatic origin of diabetes mellitus. The more serious the injury, the more striking was the disturbance in the blood sugar reaction following the administration of glucose. No relationship has been observed between the spinal fluid pressure per se and the blood sugar reaction following the administration of glucose.

Rôle of Monocyte in Tuberculosis.—In these studies on blood Cunningham and his associates are offering as a new concept for an experimental attack on the problem of tuberculosis the theory that the tubercle bacillus attacks one specific type of cell—the monocyte—and that the complete analysis of the effect of tuberculosis on monocytes is a necessary factor for laying a new foundation for progress in the study of this disease. They have found that the effect of tuberculosis on the whole system of the monocytes is a profound one, and consists primarily in a marked overproduction of the diffusely scattered reticular cells which are the parent cells of monocytes. This reticular cell is also the parent form of all of the other white blood cells, so that the effect of the tubercle bacillus on this cell is definitely to force it toward the production of monocytes. The next stage in tuberculosis is the differentiation of vast numbers of monocytes into epithelioid cells; this effect certainly takes place in monocytes which have ingested the bacilli. The bacilli are alive within the cell; and the numbers which can be seen within an individual monocyte point also to the idea that the bacilli multiply within the cell. The authors suggest that the tubercle bacillus lives as a parasite within monocytes. This concept gives a new key for the study of immunity. The effect of the tubercle bacillus on the monocyte is the accenutation of one of its normal structures and the suppression of another. The effect of tuberculosis on the monocyte is so specific that it seems to the authors to contribute additional evidence in favor of the concept that the monocyte is a different strain

of cells from the clasmatocyte. The monocyte is originally a cell in which cytoplasmic pattern is an especial characteristic as contrasted with the clasmatocyte, and it is this pattern that is accentuated in the infected monocyte or epithelioid cell. The effects of tuberculosis on the monocytes are so profound as to be seen in the monocytes of the peripheral blood. They become infected. In following the blood of the infected rabbits it was proved that the ratio of monocytes to total lymphocytes is an important law in connection with the disease. The normal ratio of monocytes to lymphocytes is 943: 2,805. In animals in which the reaction to the disease was consistently unfavorable to the animal, the ration was 2,129: 1,694. The ratio for animals in which the reaction was consistently favorable to the animal was 854: 3,047. When these figures are reduced to a ratio with the monocytes shown as one, the normal ration of monocytes to lymphocytes is 1: 2.97; the unfavorable ratio of the first group of animals is 1: 0.79, while the favorable ratio for the second group is 1: 3.56. From these studies it is felt that the immediate steps for progress in the study of tuberculosis involve the attempt to find the substances by which the change of the monocytes into the epithelioid cells is brought about.

Journal of Bone and Joint Surgery, Boston

7: 763-1030 (Oct.) 1925

*Spondylolisthesis. H. Turner and N. Tchirkin, Leningrad, Russia.—p. 763.
*Case of Protracted Disabilities in Region of Shoulder. J. T. Watkins, San Francisco.—p. 787.
*Reformation of Synovial Membrane in Knees of Rabbits After Synovectomy. J. A. Key, St. Louis.—p. 793.
Vertebral Epiphysitis. A Cause of Spinal Deformity. J. Buchnan, Brooklyn.—p. 814.
*Changes in Articular Surfaces in Tuberculous Arthritis. D. B. Phemister, Chicago.—p. 835.
*Acute Suppurative Arthritis in Children. R. I. Harris, Toronto.—p. 849.
*Davis Method for Closed Reduction of Congenital Dislocation of Hip. F. D. Dickson, Kansas City, Mo.—p. 873.
Roentgen-Ray Treatment of Callositas and Verruca Plantaris; Pathogenesis of These Lesions. L. K. McCafferty, New York, and C. L. McCarthy, Washington, D. C.—p. 883.
*Activities of Bone Cells. S. M. Cone, Baltimore.—p. 894.
Diagnosis and Prognosis of Bone Sarcoma. A. Kolodny, Iowa City.—p. 911.
*Experimental Study of Transplantation of Nerve Supply of Muscles. J. E. Stewart, St. Louis.—p. 948.
*Case of Infection of Spine. L. Mayer, New York.—p. 957.
*Osteosclerosis with Distribution Suggesting That of Ulnar Nerve. An Unclassified Bone Condition. P. Lewin and S. B. MacLeod, Chicago.—p. 969.
Hereditary Deforming Chondrodysplasia; Three Cases. H. E. Campbell, Cleveland.—p. 982.
*Malformation of Lower Spine Based on a Roentgenographic Study of Children and Adults. A. O'Reilly, St. Louis.—p. 997.

Spondylolisthesis.—Turner and Tchirkin sum up the results of their observations as follows: Spondylolisthesis is a deformity of the lower part of the spine caused by a dislocation of the body of the fifth lumbar vertebra. This slipping is determined by a congenital insufficient ossification of the vertebral arch resulting in its elongation, or more generally in actual nonunion of its "interarticular" portion. This abnormality is one of the various forms of deficient development of the lumbosacral region of the spine. This defect may exist without producing any pathologic signs or symptoms of functional disorder of the spine, owing to the natural accommodating defensive mechanism of the vertebral column. Trauma may reveal an existing defect by the production of deformity, pain, or other clinical symptoms. Injuries occurring in childhood have a more serious effect, and lead to the production of graver deformities than those occurring later in life. Spondylolisthesis, or its precursor, spondylolysis, is a derangement of common occurrence met with in both sexes and perhaps more frequently in males. The clinical picture and roentgenographic appearances of spondylolisthesis are characteristic and permit of exact diagnosis of the condition. Spondylolisthesis must be ranked among the deformities of the spine occurring in everyday practice and meriting the special attention of orthopedic surgeons. Early diagnosis of the condition will serve to prevent progress of the deformity. It is doubtful whether operative measures can aid conservative treatment in alleviating the symptoms and arresting the progress of the ailment.

Protracted Disabilities in Region of Shoulders.—Following an injury or other damage to the shoulder or the knee implying prolonged immobilization, Watkins insists that the limb should be maintained in that position which best conserves function. When the upper extremity is being considered, the logical application of this principle means that the arm must be immobilized as nearly as possible at the side of the head.

Reformation of Synovial Membrane in Knees After Synovectomy.—Key notes that in the rabbit the joint is again approximately normal sixty days after hemisynovectomy. The new synovial membrane is formed in situ by metaplasia of underlying connective tissue cells, and there is little or no tendency for surface growth from the edges to cover the denuded areas, as occurs in the repair of a defect in an epithelial surface. The synovial cells are connective tissue cells slightly specialized by their location on a free connective tissue surface.

Changes in Articular Surfaces in Tuberculous Arthritis.—In the earlier stages of tuberculous arthritis, in joints with both free and contacted articular surfaces, Phemister says, the articular cartilage is usually destroyed most extensively along its free articular surfaces by granulations which overgrow it from the surrounding synovial membrane. In the regions of contact and pressure of articular surfaces, surface destruction by granulations does not take place, and the cartilage is preserved longest. As the disease progresses, subchondral granulations develop which absorb the articular cortex and attack the cartilage from beneath. In severe tuberculous arthritis there may be early necrosis and caseation of the overgrowing synovial granulations, so that there is little or no destruction of articular cartilage along its free surfaces. In this event the destruction of articular cartilage is brought about mainly by the subchondral granulations, which do not undergo early necrosis and caseation and do not present the usual histologic picture of tuberculous tissue. The bony involvement along the articular surface may be either primary or secondary. When primary, the dead bone may break down, leaving a cavity, or may persist and form a sequestrum which has articular cortex and, in some instances, cartilage preserved on it and is denser than the surrounding living bone which subsequently atrophies. Secondary involvement of bone along the articular surfaces may lead either to destruction of the entire articular cortex by superficial caries or to more or less extensive and deep areas of necrosis at the points of greatest pressure in the joint. This deep invasion is often bilateral and is followed by the formation of "kissing sequestrums," which may be mistaken for primary foci of osseous infection.

Acute Suppurative Arthritis in Children.—An analysis is presented by Harris of the etiology, treatment and end-results of fifty-one cases of suppurative arthritis. The best treatment is simple arthrotomy for drainage, instituted at the earliest possible moment and supplemented with fixation and extension. Such treatment results in recovery with normal movement in more than half the cases.

Reduction of Congenital Dislocation of Hip.—As a result of his experience with the Davis method of closed reduction of congenital dislocation of the hip, Dickson is convinced that this method is as effective in its results as any of the accepted methods. As the force is applied to the head of the bone, no leverage action being used, there is less danger of producing a fracture of the femur than in most of the circumduction methods. There is a minimum amount of trauma to the soft parts by this method, which is a very desirable factor, little or no reaction following. The sooner after the age of 2 years the hip or hips are reduced, the better the results. The closed reduction after the age of 7 years is difficult and the outcome, as a rule, far from satisfactory.

Activities of Bone Cells.—The conditions described by Cone indicate that bone under pathologic conditions may act like any other tissue. There is a revision of its various constituents to an embryonal condition and a remodeling of the bone in ways suitable to the change in its circulation and chemistry. There is a coincident reversion of bone cell and marrow cell to the embryonal state. New bone and new connective tissue result therefrom. The most important

factor in bone cell renewed activity is passive hyperemia and edema. Edema dissolves the salts, softens the bone matrix, and is instrumental in the enlargement and confluence of lacunae. The bone cell is released before it again becomes active. The bone cells, notably those at the margins of the cancelli, enlarge, divide, and are now free in the marrow. They form a part of the marrow as possible bone formers. They are seen as a syncytium or as cell masses resembling callus, and grade off into new bone.

Experimental Transplantation of Muscle Nerve Supply.—Stewart presents the results of a series of experiments in nerve transplantation on animals, by a method which seemed to offer a more direct contact between active and degenerated nerve fibers in muscles than the implantation of the nerve trunk directly into muscle, and one which presented fewer technical difficulties than the end-to-end suture of small nerve trunks. A nerve-muscle transplant was made. The conclusion is drawn from summing up the entire series of experiments that it is possible to reneurotize a paralyzed muscle by transplanting a block of active muscle containing its nerve supply into the paralyzed muscle, but the technical difficulties are so great that considerable doubt is thrown on its practical application. Several points were brought out in the work that are considered of value, both in future investigative work and in practical surgery. It was noticed that dogs in which sartorius muscle had been resected and the rectus femoris paralyzed, got about perfectly normally after a few weeks, showing no limp whatever in walking. Experiments, the results of which were determined by the ability of the animal to use the extremity, would therefore seem unreliable.

Infection of Spine.—The clinical study of his case forces Mayer to the conclusion that a kyphos is not necessarily produced by a change in the shape of the vertebral bodies. It may also be caused by an inflammatory lesion of the bone, which, without resulting in actual bone destruction, seems to favor a softening of the intervertebral disks and a consequent deviation of the spinal bodies from the normal alinement. In the lumbar region the kyphosis could be produced by a spasm of the psoas muscle, which, taking its origin from the lateral process, would cause a buckling of the spine demonstrable in the roentgenogram by a narrowing of the anterior portion of the intervertebral spaces. In the case studies, the inflammatory lesion was due to *Streptococcus viridans*, which in this, as well as in other reported cases, causes bone inflammation without pus formation.

Osteosclerosis with Peculiar Distribution.—Lewin and MacLeod present a brief history, physical examination and roentgenograms of a condition of unusual bone pathology characterized by a peculiar distribution confined to the bony structures of the lower forearm, wrist, hand and fingers, corresponding with the superficial ulnar nerve distribution plus the entire ulna. The changes in the bones are characterized by increased production of bone, sclerosis, eburnation, almost complete disappearance of medulla, with obliteration of cortical outlines, slight periosteal thickening, lack of atrophy, or canalization, and no invasion of the soft tissues. The ulna is outwardly curved, and there is decreased deep sensibility to tuning-fork tests applied to the bones involved. The etiology may lie in a congenital anomaly or a neurologic or vascular disturbance.

Malformation of Lower Spine.—It would seem from O'Reilly's study that variations in the lumbosacral region occur frequently in persons who have never had any symptoms of backache and that some of these variations are very marked and severe. They also occur in persons who lead an active life and who work hard. It is probable that these variations predispose to backache, but that posture, muscle relaxation, and ligamentous strain are the actual causes.

Journal of Comparative Neurology, Philadelphia

39: 173-324 (Oct.) 1925

Optic Tracts and Centers of Opossum, Didelphis Virginiana. C. Tsai, Chicago.—p. 173.
Descending Tracts of Thalamus and Midbraid of Opossum, Didelphis Virginia. C. Tsai, Chicago.—p. 217.
Development of Cerebellum in Frog (Hyla Regilla) in Relation to Vestibular and Lateral Line Systems. O. Larsell, Portland, Ore.—p. 249.
Size Changes in Primary Brachial Motor Neurones Following Limb Excision in Amblystoma Embryos. S. R. Detwiler and R. W. Lewis.—p. 291.
Postnatal Changes in Vascularity in Cerebral Cortex of Male Albino Rat. E. H. Craigie, Toronto.—p. 301.

Journal of Immunology, Baltimore

10: 741-844 (Sept.) 1925

Physicochemical Aspects of Hemolysis. R. Rockwood, Rochester, Minn.—p. 741.
Antigenic Character of Heated Protein. J. Furth, Philadelphia.—p. 777.
*Agglutination Reactions of Diphtheria Group of Organisms. G. H. Bailey, Boston.—p. 791.
*Precipitin Test in Identification of Yeasts. A. K. Balls, Philadelphia.—p. 797.
Natural Auto and Homoio Spermotoxins in Guinea-Pig Serum. L. S. N. Walsh, St. Louis.—p. 803.
Serologic Studies on Bovine Infectious Abortion. J. G. McAlpine and L. F. Rettger, New Haven, Conn.—p. 811.
*Complexity of Scarlet Fever Toxin and Antitoxin. W. H. Park and R. G. Spiegel, New York.—p. 829.
*Specific Hypersensitiveness. XVIII. Indirect Method of Testing for Conditions of Atopic Hypersensitiveness. M. Walzer and S. D. Kramer, Brooklyn.—p. 835.

Agglutination Reactions of Diphtheria Group.—No relationship was found by Bailey between a considerable number of strains of avirulent diphtheria bacilli and a limited number of strains of virulent diphtheria bacilli, *B. hofmanni* or *B. xerosis*.

Precipitin Test in Identification of Yeasts.—Balls shows that serum reaction may offer considerable aid in the differentiation of various species and subspecies of yeasts. The precipitin method, however, is evidently quite well adapted for use in differentiating between closely related subspecies of yeasts and in showing relationships, presumably in their protein structures which are not brought out in the ordinary botanical classification.

Complexity of Scarlet Fever Toxin.—In testing for the potency of scarlet fever antitoxin, Park and Spiegel noticed that an amount of horse antitoxic serum which would neutralize the toxin in a majority of children would totally fail in others. It was also noted that the antitoxic serum of different horses would occasionally vary in the ability to neutralize a toxin in the same child and finally that in some individuals in whom the ordinary amount of antitoxin was not effective there was an increased amount of antitoxin. These observations seem to prove that the scarlet fever toxic filtrate produced by a single strain was not a single toxin but a group of toxins, and that a person might be immune to one or more of the component toxins of a toxic broth and yet susceptible to others. They also prove that certain horses react in producing antitoxin more to one of the components and certain horses to another in much the same way as Park has shown—that of two horses receiving simultaneously the same quantity of tetanus and diphtheria toxins one may develop a potent diphtheria antitoxin and a weak tetanus antitoxin while the other will do the opposite. The same difference is noted in different animals receiving the same dose of bacterial antigen.

Indirect Method of Testing for Hypersensitiveness.—Walzer and Kramer employed the principle of transferred local specific hypersensitiveness as the basis for an indirect method of testing for hypersensitiveness in those cases in which direct testing of the patient is inadvisable or impossible. This method is most applicable to infants and children.

Journal of Infectious Diseases, Chicago

37: 285-384 (Oct.) 1925

Antigenic Properties of Certain Glucoproteins. K. Goodner, Lawrence, Kan.—p. 285.
*Toxic Products of Bacterium Enteritidis of Related Micro-Organisms. S. E. Branham, Chicago.—p. 291.
Protective Substance in Antipneumococcic Serum. II. L. D. Felton, Boston.—p. 309.
Quantitative Relations Between Antigen and Antibody in the Precipitin Reaction. H. W. Cromwell, Madison, Wis.—p. 321.
*Nonglucose Fermenting Bacteria and Insulin. LXXIII. A. I. Kendall, St. Louis.—p. 329.

Effect of Insulin on Cultures of B. Bulgaricus and B. Acidophilus. LXXIV. A. I. Kendall and M. Ishikawa, St. Louis.—p. 333.
•Effect of Insulin on Bacterial Metabolism. LXXV. A. I. Kendall and M. Ishikawa, St. Louis.—p. 337.
•Pathogenic Subtilis Bacillus from Patient with Chronic Tuberculosis. H. C. Sweany and M. Pinner, Chicago.—p. 340.
•Toxin Production by Clostridium Botulinum in Canned Foods. L. Thompson and F. W. Tanner, Urbana.—p. 344.
•Actual Temperatures Attained by Mediums in Autoclave Sterilization. A. Benton and A. Leighton, Washington, D. C.—p. 353.
•Germicidal Efficiency of Coconut Oil and Linseed Oil Soaps: Their Mixtures with Cresol. F. W. Tilley and J. M. Schaffer, Washington, D. C.—p. 359.
•Standardization of Tuberculin. E. R. Long, Chicago.—p. 368.

Toxin of Bacterium Enteritidis.—Branham's results appear to indicate that the poison demonstrated by his experiments is within the bacterial cells, is set free on cell disintegration, and probably is not a true soluble toxin.

Effect of Insulin on Nonglucose Fermenting Bacteria.—Kendall's results were wholly negative. There is no suggestion in them that insulin, under the conditions imposed by the method employed, stimulated the several nonglucose fermenting bacteria to utilize this sugar with the production of acid.

Effect of Insulin on Bacterial Metabolism.—It would appear that insulin, under the conditions imposed by the experiment done by Kendall and Ishikawa, had no appreciable effect on the utilization of glucose for energy by a considerable number of bacterial types.

Pathogenic Subtilis Bacillus in Case of Tuberculosis.—In the case of a patient with acute and chronic tuberculous lesions in the lungs and other organs and with widely scattered hemorrhages and larger and smaller abscesses, as well as acute inflammatory processes in the endocardium, pericardium, leptomeninges, etc., bacteriologic examination gave the following results: from the heart blood, *Streptococcus nonhemolyticus* and *Bacillus subtilis;* from the pericardial fluid, *S. nonhemolyticus* and *B. subtilis;* from the pericardial fluid, pneumococcus, *Staphylococcus aureus* and *B. subtilis;* from the peritoneal fluid, *S. aureus* and *B. subtilis;* from the brain abscess, *B. coli.* According to Sweany and Pinner, this appears to be the second time that a subtilis bacillus, pathogenic for animals, has been isolated from human sources other than the eye. This bacillus was isolated from most of the lesions and the principal body fluids; it grew at first only on medium containing blood, in which it produced a large hemolytic zone, and it killed white rats. These results suggest that subtilis bacilli in cultures from human sources perhaps should not be discarded offhand as always being due to mere contamination.

Toxin Production by C. Botulinum in Canned Foods.—Twenty-three kinds of food were inoculated by Thompson and Tanner with detoxified spores of four strains of *Clostridium botulinum.* Those found to be regularly toxic with all strains are: red kidney beans, lima beans, hominy, peas, sweet potato, salmon and shrimp. Those irregularly toxic are: asparagus, beets, pumpkin and spinach. The acid fruits and the very acid vegetable products, such as sauerkraut and dill pickles, did not become toxic. Certain extracts and liquors from canned vegetables were used as a medium in comparison with brain broth and hormone broth. The extract from white potato was found equal to the best medium for promoting growth. The liquor from cans of peas, corn and salmon gave lesser growth, while that from spinach gave growth only after being neutralized. The reaction in cans of asparagus, string beans, beets, pumpkin and spinach probably explains the irregularity of toxic production so frequently noted in these foods. The reaction in certain canned vegetables is greatly affected by the quality of the material put in the cans. Experiments with spinach show that a small amount of rotted material will reduce the acidity to a point where *C. botulinum* can grow and develop a toxin.

Sterilization Controlled by Temperature Not Pressure.—Benton and Leighton emphasize the point that sterilization should be controlled according to temperature, not pressure. Autoclaves should be equipped with reliable thermometers and should have the air outlet at the bottom.

Germicidal Efficiency of Coconut and Linseed Oil Soaps.—Tilley and Schaffer found that coconut oil soap has a greater bactericidal efficiency than linseed oil soap against *B. typhosus, B. pyocyaneus* and *Staphylococcus aureus,* both in the absence of added organic matter and in the presence of 25 per cent. of the horse blood serum. The bactericidal efficiency of coconut oil soap is increased by the addition of a slight excess of alkali and by the addition of sodium chlorid. The practical value of the action of sodium chlorid is, however, greatly diminished by the undesirable physical changes produced and by failure to maintain the increased efficiency in the presence of blood serum. Although its low efficiency against *Staphylococcus aureus* and *B. tuberculosis* limits the value of coconut oil soap as a disinfectant, it seems likely that it can be used to advantage against other organisms. It is suggested that if a nonpoisonous antiseptic in the form of soap is desired, this need may be very well met by the use of pure coconut oil soap, which combines some germicidal activity with the detergent properties of soap. The bactericidal efficiency of cresol soap mixtures is greatly affected by the proportions of soap and cresol used. Mixtures containing approximately half as much soap as cresol showed maximum efficiency. An increase in the proportion of soap causes a reduction in efficiency. Saponified cresol solutions containing coconut oil soap have a greater germicidal efficiency than those containing linseed oil soap, both in the absence of added organic matter and in the presence of 25 per cent. blood serum. The difference in efficiency is most marked when the cresylic acid used contains a large proportion of high boiling phenols. The addition of sodium hydroxid in fairly large excess over that needed to saponify the oil does not diminish the bactericidal efficiency of saponified cresol solutions. The addition of sodium chlorid to diluted saponified cresol solutions containing coconut oil soaps increases bactericidal efficiency without causing such undesirable physical changes as occur with the soaps alone. The increased efficiency is fairly well maintained in the presence of 25 per cent. blood serum. It was found that 21 per cent. coconut oil (or the chemically equivalent amount of its fatty acids) as soap can satisfactorily take the place of 28 per cent. linseed oil as soap for holding in solution the 50 per cent. cresylic acid contained in saponified cresol solutions.

Standardization of Tuberculin.—Long proposes standardizing tuberculin on the basis of the hypersensitiveness of the spermatocytes of the tuberculous guinea-pig to the action of tuberculin. The spermatocyte reaction (previously reported as the testicle reaction) is delicate, and when carried out in the manner described, is said to be of greater constancy and reliability than the other methods based on hypersensitiveness of the tuberculous guinea-pig; namely, the minimum lethal dose and the cutaneous test methods. Necrosis and subsequent absorption of the spermatocytes is used as the basis for recognizing a positive reaction, and the limiting dilution at which this is observed under the conditions outlined above is considered to represent one unit of tuberculin.

Laryngoscope, St. Louis

35: 735-812 (Oct.) 1925

Teaching of Undergraduate Laryngology. L. W. Dean, Iowa City.—p. 735.
Problem of Focal Infections in Nasal Sinuses. E. R. Faulkner, New York.—p. 742.
Osteoma of Frontal Sinus Extending into Orbit and Anterior Cerebral Fossa. H. M. Goodyear, Cincinnati.—p. 751.
Sublingual Tonsillar Abscess. Lingual Quinsy. M. F. Butler, Philadelphia.—p. 754.
Pemphigus as Beginning Tonsillar Manifestation. H. Dintenfass and S. S. Greenbaum, Philadelphia.—p. 758.
Head Injury from Air Rifle; Operation; Recovery. J. A. Morgan, Honolulu.—p. 763.
Maxillary Sinusitis of Oral Origin. H. S. Dunning, New York.—p. 766.
Intermittent Protrusion of Right Eye. S. J. Selkin, New York.—p. 772.
Three Cases of Primary Acute Mastoiditis. S. J. Kopetzky, R. Almour, New York.—p. 775.
Clinical Significance and Diagnostic Value of Tuning Fork Tests for Hearing. A. B. Duel, New York.—p. 778.
Brain Abscess, Sinus Thrombosis and Meningitis Complicating Acute Mastoiditis; Two Cases. J. M. Polsiar, Brooklyn.—p. 782.
Temporosphenoidal Abscess and Mastoiditis of Doubtful Origin. W. Siegmeister, Brooklyn.—p. 787.

Modified Radical Mastoidectomy for Chronic Purulent Otitis Media. H. B. Blackwell, New York.—p. 791.
Two Cases of Primary Jugular Bulb Thrombosis, Not in Infants. W. Ginsberg, New York.—p. 800.
Sinuscope. M. Maltz, New York.—p. 805.

New York State Journal of Medicine, New York

25: 983-1018 (Nov. 1) 1925

Problem of Chronic Cardiac Cripple. J. B. Herrick, Chicago.—p. 983.
*Statistical Aspects of Problem of Organic Heart Disease. L. I. Dublin, New York.—p. 986.
*Program of Procedure in Problem of Cardiac Cripple. H. F. Swift, New York.—p. 991.
*Organization of Cardiac Clinic. J. Wyckoff, New York.—p. 995.

Organic Heart Disease.—Among 1,000 cases of organic heart disease referred to by Dublin, 88 per cent. of the patients showed enlargements of the heart, among whom one in five had enlargement of the heart only. Hypertrophy was the commonest impairment. Mitral insufficiency was diagnosed in approximately half of all the cases. Mitral stenosis was present in 44 per cent.; but, in nearly all of these cases, mitral regurgitation was also present. Aortic insufficiency was present in about 15 per cent.; aortic stenosis, in about 3 per cent.; aortitis, in 17 per cent., and aneurysm in a little over 1 per cent.

Special Cardiac Clinic and Periodic Examinations.—Swift points out that the formation of special cardiac clinics and periodic examination of apparently well persons will afford many opportunities for detecting various types of heart disease much earlier than has been possible in the past. These opportunities also carry with them the obligation of giving proper advice concerning specific as well as general prophylactic and curative measures. In diseases of the circulatory system, entirely new problems will be presented to the physicians, for in the past most of the patients have not applied for medical assistance until their cardiac capacity was diminished enough to prevent them from carrying on their daily tasks.

Organization of Cardiac Clinic.—Wyckoff details not only the plan of organization for a heart clinic in general, but also that of the Bellevue Hospital Social Service Cardiac Clinic for Working Adults in particular in all its details.

Ohio State Medical Journal, Columbus

21: 801-872 (Nov. 1) 1925

The Doctor—Protection or Rescue. G. E. Vincent, New York.—p. 805.
Causes of Failure in Corrective Rhinoplasty. J. Maliniak, New York.—p. 807.
Complicating Factor Duodenal Stasis in Diagnosis of Chronic Upper Abdominal Disease. J. T. Murphy, Toledo.—p. 815.
*Beef Bone Splints. I. B. Harris, Columbus.—p. 818.
*Placenta Praevia and Ablatio Placentae. W. R. Barney, Cleveland.—p. 821.
Relation of Anxiety States to Thyroid Gland. C. E. Kiely, Cincinnati.—p. 824.
*Early Pregnancy Following Delivery; Case. W. Brehm, Columbus.—p. 826.

Beef Bone Splints.—Twenty-one cases of fracture treated by the use of beef bone as an intramedullary splint are reported by Harris. Favorable results were obtained in every case. In only two cases of fracture of the femur was union delayed for a few weeks longer than usual.

Placenta Praevia and Ablatio Placentae.—Barney reports forty-eight cases of placenta praevia, an incidence of 1:170. Of this series thirteen were marginal, twenty-three were lateral, and twelve were central. The maternal mortality was 2 per cent plus, only one woman dying on the nineteenth day post partum. Necropsy showed a pyelonephrosis and an abscess in the uterine incision which was probably the original focus of infection. Twelve fetal deaths were noted, making a fetal mortality of 25 per cent. Of these, seven were in the nonviable age and one was a macerated fetus. Of forty-six cases of ablatio placentae, six were of the complete variety, making a case incidence of 1:130. The maternal mortality among these cases was 16 per cent; the fetal mortality, 40 per cent.

Early Pregnancy Following Delivery.—July 7, 1924, Brehm delivered his patient, aged 21, of a normal full-term child. April 21, 1925, he delivered her of twin girls. Except for the size they appeared normal.

South Carolina Medical Association Journal, Greenville

21: 231-258 (Oct.) 1925

Brief Consideration of Pelvic Inflammatory Disease. W. B. Sparkman, Greenville.—p. 233.
History of Uncinariasis. H. Smith, Greenville.—p. 236.
Drinking Water with Meals. Potential Aid to Digestion. G. M. Niles, Atlanta, Ga.—p. 237.
Medical and Surgical Potpourri from Some Clinics of Europe. J. R. Young and C. S. Breedin, Anderson.—p. 239.

Texas State Journal of Medicine, Fort Worth

21: 335-396 (Oct.) 1925

*Human Amebiasis. C. A. Kofoid, Berkeley, Calif.—p. 347.
*Asthma and Sinus Disease in Children. J. L. Jenkins, Dallas.—p. 350.
*Acute Hemorrhagic Cortical Encephalitis. L. O. Wilkerson, Bryan.—p. 354.
*Periarterial Sympathectomy. C. S. Venable, San Antonio.—p. 356.
Multiple Myeloma Syndrome in a Child. M. E. Gilmore, Fort Worth.—p. 358.
Idiopathic Atony of Bladder. R. S. Mallard, Fort Worth.—p. 362.
Factors Essential to Good End-Results in a Gastric Surgery. C. V. Brindley, Temple.—p. 364.
Perforating Duodenal Ulcer. J. W. Burns, Cuero.—p. 367.
Nondiabetic Acidosis. R. Moore, Dallas.—p. 369.
Treatment of Toxemias of Pregnancy. W. R. Cooke, Galveston.—p. 372.
*Pollen Hay-Fever and Asthma. I. S. Kahn, San Antonio.—p. 375.
Roentgen-Ray Diagnosis of Pulmonary Tuberculosis. J. W. Cathcart, El Paso.—p. 379.
Asthenopia. N. H. Bowman, Waco.—p. 382.

Human Amebiasis.—The relationship of amebic infection, not only to dysentery, but also to chronic intestinal trouble, to local abscesses and to certain arthritic conditions, Kofoid points out, makes this infection an important one in medical practice. This infection also constitutes a complicating factor which should be borne in mind in all cases in which diagnosis is obscure. A thorough going, accurate stool examination by a competent examiner trained in protozoology is highly desirable in any complete physical examination.

Sinus Disease and Asthma.—In all cases of asthma, Jenkins would consider the sinuses a causative factor until proved otherwise. Negative proof should be arrived at only after repeated examinations by a rhinologist.

Mercurochrome in Acute Encephalitis.—Wilkerson reports two cases of acute hemorrhagic encephalitis of the cortex, in one of which recovery followed treatment with mercurochrome-220 soluble.

Periarterial Sympathectomy.—Venable has performed periarterial sympathectomy in two cases of Raynaud's disease, in one case of early diabetic endarteritis and in one case of old trophic ulcer, the result of sciatic injury. In one case of Raynaud's disease, imminent amputation was postponed for eight months, and then amputation just above the ankle resulted in prompt healing of the stump, which was very interesting because of a series of previous amputations of the other leg, due to the same cause. In the other case of Raynaud's disease, there was complete obliteration of the femoral artery from the middle of Scarpa's triangle to the ulcerative stump site just below the knee. But even at this the circulation was improved for several days, the pain relieved, and the edema and gangrenous line of demarcation lessened, followed by prompt stump healing after subsequent amputation. The patient with early diabetic endarteritis has now remained well for nearly five months. The case of trophic ulcer of the heel as a result of severance of the sciatic nerve, two and one-half years before, was of two years' duration. Following a sympathectomy, this ulcer healed in about five weeks, with no further treatment than being kept clean with mercurochrome solutions.

Treatment of Pollen Hay-Fever and Asthma.—Kahn emphasizes the fact that the successful handling of hay-fever and asthma consists of a great deal more than the application of a few routine commercial skin tests, followed by the mechanical administration of from sixteen to twenty previously determined advertised dosages, none of which may be applicable to the individual case at hand. Such routine may help about 40 per cent of the cases, but will benefit fewer than that in Texas. Kahn details his method of treatment with pollens, which has yielded more than 80 per cent. of success.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Anesthesia, Manchester

3: 49-108 (Oct.) 1925

Postanesthetic Toxemias. S. R. Wilson.—p. 49.
Advent of Great Discovery: Anesthesia, October, 1846. D. W. Buxton. —p. 56.
Eye Troubles and Anesthesia. J. Blomfield.—p. 66.
Present Status of Local Anesthesia. R. E. Farr.—p. 68.
Lawson Tait; Pioneer in Certain Methods of Anesthesia. W. J. McCardie.—p. 76.
Nitrous Oxid-Acetylene-Oxygen Anesthesia for Tooth Extraction and Oral Surgery. A. Goldman and J. D. Goldman, New York.—p. 80.

British Journal of Experimental Pathology, London

6: 203-268 (Oct.) 1925

*New Method for Concentration of Bacilli in Tuberculous Milk. S. R. Douglas and L. J. Meanwell.—p. 203.
*Plague Immunization in Guinea-Pigs and Rats. H. Schütze.—p. 207.
*Rabbits and Experimental Measles. W. J. Purdy.—p. 210.
*Virulence of Corynebacterium Diphtheriae, Especially of Atoxic "Subspecies." S. F. Dudley.—p. 225.
*Significance of Serologic Types of Gonococcus. E. E. Atkin.—p. 235.
*Obstruction of Renal Tubules During Excretion of Hemoglobin. S. L. Baker and E. C. Dodds.—p. 247.
*Etiology of Dental Caries. IV. J. McIntosh, W. W. James and P. Lazarus-Barlow.—p. 260.
*Etiology of Dental Caries. V. E. C. Dodds.—p. 266.

Concentrating Bacilli in Tuberculous Milk.—A method of concentration is described by Douglas and Meanwell by means of which the microscopic examination of milk for the presence of tubercle bacilli is made more reliable. Briefly, the method consists in shaking the milk with oil before the addition of the fat solvent (ether). Practically all the bacilli suspended in the fluid are finally collected in the zone lying between the oily and watery layers. Out of thirty samples of tuberculous milk, twenty-six were positive microscopically by the use of this method, while by the routine method tubercle bacilli were demonstrated only ten times.

Plague Immunization in Guinea-Pigs.—Three well known types of plague vaccine—Haffkine's broth, heat killed agar-grown and phenol killed agar-serum vaccine—have been compared by Schütze, and in the experiments with guinea-pigs a difference in immunizing power was disclosed. The last was the most efficacious—a vaccine prepared according to the modified method of Rowland. In the experiments with rats all three vaccines immunized equally well. Whether this is due to the infecting doses having been too weak for severe and differentiating tests, or because rats respond to plague vaccines in a different manner from guinea-pigs, and if so, to which of those animals man in this respect more nearly corresponds, has not been decided.

Experimental Measles in Rabbits Not Possible.—Purdy has uniformly failed to produce experimental measles in rabbits but of the only two monkeys used, both gave an apparently satisfactory positive reaction.

Virulence of Corynebacterium Diphtheriae.—All of thirty-four strains of toxic diphtheria bacilli used by Dudley killed guinea-pigs with small doses. No strains were found with a virulence intermediate between that of the toxic strains and the nontoxic. The lethal action of the large doses was neutralized to a great extent by antitoxin. The nature of the toxic action is discussed. It is thought to be due more probably to an endotoxin than to exotoxin and the protective action of antitoxic serum to the presence in the serum of antibodies other than antitoxins.

Serologic Types of Gonococcus.—Atkin's observations lend no support to the view that gonococcal strains can be divided up into an arbitrary number of fixed serologic groups.

Renal Obstruction Following Blood Transfusion.—Two cases of intrarenal obstruction caused through blood transfusion are described by Baker and Dodds and compared with the intrarenal obstruction of blackwater fever. A series of in vitro experiments proves that hemoglobin is thrown out of solution when (*a*) the reaction of the medium is not more than about p_H 6, and (*b*) the sodium chlorid content is about 1 per cent. or over. From these experiments it would appear that hemoglobin is excreted in solution in the glomerular transudate. After concentration in the tubules the acidity and the salt concentration increase, with the result that the pigment is precipitated, probably in the form of hematin. This theory would explain the production of intrarenal obstruction in cases of the type described and in blackwater fever. A suggestion for the treatment of these conditions, based on the above conclusions, is offered; namely, the production of alkaline diuresis.

Etiology of Dental Caries.—A summary of results to date obtained by McIntosh et al. in this study shows that saliva appears to be intimately connected with the occurrence or nonoccurrence of dental caries, being more acid in those subject to the condition than in those who are immune. Experiments devised to show that teeth vary in their powers of resisting acid were inconclusive. The saliva may contain agglutinins against *B. acidophilus-odontolyticus*, but only in small quantities. Saliva has no appreciable bactericidal action against *B. acidophilus-odontolyticus*.

Etiology of Dental Caries.—An inquiry into the relations between the concentration of certain nitrogenous bodies and chlorids of blood and saliva is described by Dodds. Attention is called to the high ammonia content of saliva, together with a method for its estimation apart from urea. There is no constant relationship between the constituents of blood and saliva examined, except that the former are much the lower. The variations and the composition of saliva are so great that no clinical significance can be placed on the figures —at least for normal individuals.

British Journal of Tuberculosis, London

9: 163-218 (Oct.) 1925

Montana as Swiss Health Station for English Tuberculous Patients. T. N. Kelynack and A. Morland.—p. 163.
Hypocrinism in the Tuberculous. H. R. Harrower.—p. 181.
*Late Results of Renal Tuberculosis. J. S. Joly.—p. 188.
*Danger of Tuberculous Infection from Migratory Consumptives. W. B. Tomson.—p. 196.
Morland Clinics at Alton. H. Gauvain.—p. 200.

Late Results of Renal Tuberculosis.—Joly asserts that renal tuberculosis treated by nonoperative methods, such as tuberculin, is generally fatal. About 90 per cent. of the patients die from the direct effects of their infection. The majority of the so-called cures are really cases in which the kidney becomes occluded, and the tuberculous process is not arrested but is merely shut off from the rest of the urinary tract. There are a few instances in which a portion of the kidney has become occluded while the remainder of the organ continues to function, but they are so rare that they are pathologic curiosities. Further, these patients are not cured, as they still suffer from a closed tuberculous focus. As for surgical treatment, the total mortality is about 20 per cent., the cures amount almost to 60 per cent., while the remaining patients still suffer from tuberculosis. Joly is certain that if patients were given a thorough physical examination as soon as the tubercle bacilli were found in the urine, better results would accrue from efforts at treatment. The operative mortality would be negligible; the late mortality would not be more than 10 per cent., and the ultimate cures would be at least 75 per cent.

Danger of Tuberculous Infection from Migratory Consumptives.—To prevent tuberculous infection by migratory consumptives, Tomson suggests the enforcement of measures for the control and disinfection of tuberculous sputum: the tuberculous patient must be under supervision as long as he is at large; it is advisable to perfect the system of notification. Health authorities should notify one another whenever possible regarding the movements of tuberculous patients, so that a medical officer of health may know the address of every consumptive arriving in his locality. The onus of notification should rest on the patient, so that when a tuberculous patient goes to live in a different locality, it should be his legal duty to notify the right authority. This is Tomson's main contention. A still further advance suggested is to develop the principle of segregation. It would be enormously to the advantage of the patient as well as to the public if consumptives could live in houses or hostels especially adapted

to their needs. These patients should be able to obtain apartments suitably furnished, easily cleansed, and dust free. Attention should be directed to sunlight. The proposed establishment should be under the management of a woman who possessed a knowledge of housekeeping and who had undergone a special training for the work and who understood the habits of the poor.

Glasgow Medical Journal

22: 185-240 (Oct.) 1925

*Ringbodies in Anemia. T. K. Monro and J. A. W. McCluskie.—p. 185.
Epidemic Diseases of Central Nervous System. A. K. Chalmers.—p. 190.

Ring Bodies in Anemia.—In every one of eight cases of pernicious anemia Monro and McCluskie found ring bodies. In one case reported in detail the cells affected were chiefly those showing some abnormality of color, a few showing punctate basophilia. In some cells there was only a bright acidophil granule; in others, a stout ring usually of reddish violet color, with a small chromatin dot somewhere in its circumference. The predominant type was a bright red oval ring, usually with one or two transverse striations, and a particle which took on the chromatin stain at one pole. Occasional figures-of-eight and forms resembling a coiled spring were seen, all of which took a characteristic red color with Leishman's stain. In several of the affected cells brick-red granules were seen, closely resembling Schuffner's dots as observed in benign tertian malaria. Giemsa's stain was used.

Journal of Neurology and Psychopathology, London

6: 91-180 (Aug.) 1925

Epilepsy as Symptom of Disseminated Sclerosis. S. A. K. Wilson and H. J. MacBride.—p. 91.
Case of Multiple Neurofibromata Associated with True Angioneurofibroma of Acoustic Nerve, Jacksonian Epilepsy and Osteoporosis. G. W. T. H. Fleming and H. A. Cookson.—p. 104.
Syringomyelia in Association with Aromegaly. H. J. MacBride.—p. 114.
*Psycho-Analytical Method of Getting to Sleep. E. P. Farrow.—p. 123.
Significance of Vegetative Nervous System in Tabes Dorsalis. M. R. Barkas.—p. 126.

How to Go to Sleep.—The most successful method of securing sleep in Farrow's experience proved to be the process of painting large imaginery figure threes extremely slowly on a large imagined black wall with an imaginery brush and can of white paint. The author of this method had said that after one had painted three of these threes in this very slow manner, he would find it quite impossible to remain awake. This process usually worked very well in the author's case. He usually went off to sleep after he had finished painting only one or two of the threes; but if not, almost invariably after he had finished the three of them.

Journal of Oriental Medicine, Dairen, Manchuria

3: 127-194 (Sept.) 1925

Secretion of Gastric Juice When Given Rice Gruel as Test Breakfast. Y. Nakao.—p. 127.
Effects of Water on Gastric Secretion: Its Application for Examination of Gastric Functions. Y. Nakao.—p. 150.
Significance of Glycosuria Resulting from Ligation of Common Iliac Artery. M. Arai.—p. 186.
Typhus and Paratyphus Abdominalis in Manchurian Children. S. Kawashima.—p. 189.
Agglutination Power of Tuberculous Serum. T. Yamaguchi.—p. 190.
Pelvic Veins of Japanese Women. M. Saito.—p. 191.
Recurrences in Course of Scarlet Fever. T. Satake.—p. 193.

Journal of State Medicine, London

33: 451-500 (Oct.) 1925

Sterilization of Water by Chlorin and Some of Its Compounds. C. H. H. Harold.—p. 451.
Criteria Necessary for Identification of Microbe as Pathogenic. W. M. Crofton.—p. 478.
*Preventive Properties of Urethane Derivative of Oxyaminophenylarsinic Acid in Experimental Syphilis. C. Levaditi and S. Nicolau.—p. 481.
*West Country Method of Rendering Milk Safe from Tubercle. H. Scurfield.—p. 487.

Preventive Properties of Urethane Derivative.—The urethane derivative of oxyaminophenylarsinic acid is an arsenical compound, which, according to Levaditi and Nicolau, when given by mouth brings about a rapid healing of the syphilitic lesions of the rabbit. Moreover, this compound exhibits prophylactic properties.

Rendering Milk Safe from Tubercle.—In the western counties of England milk has been heated from time immemorial, apparently without any one having raised the point that it might thereby be damaged. The milk is gradually heated over a period of about an hour to 170 F., and then gradually cooled. It may be taken therefore that it is held at over 155 F. for well over half an hour, an exposure quite sufficient to render it tubercle safe. The ordinary method adopted in a Devonshire farmhouse is to heat the milk in earthenware pansions holding about 6 quarts each on the top of the hot plate of the closed range. The method is such that interference with the vitamin content of the milk need not be feared.

Lancet, London

2: 693-734 (Oct. 3) 1925

*Postural (Orthostatic) Albuminuria. J. W. Russell.—p. 683.
Cures of Aesculapius. E. A. Gardner.—p. 688.
Human Touch in Professional Life. J. H. Beith.—p. 691.
Student-Habit. A. Keith.—p. 694.
Surgical Treatment of Brachial Birth Palsy. J. Gilmour.—p. 696.
*Rheumatic Disease in Childhood. M. O. Raven.—p. 699.
Two Cases of Lateral Sinus Thrombosis. D. J. Collier.—p. 700.
Atrophy of Renal Origin in Young Infant. C. Chisholm and E. F. Willock.—p. 701.

Postural Albuminuria.—By the term postural (or orthostatic) albuminuria, Russell means nothing more than an albuminuria which develops in the upright position and ceases when the patient lies down. Many patients suffering from scarlet fever, who present no albuminuria during the period of rest in bed, develop an orthostatic albuminuria immediately after getting up. Some, at any rate, of these albuminurias persist for a considerable time, or even permanently. Some cases of recognized scarlatinal nephritis are ultimately represented by an albuminuria of the orthostatic type. Orthostatic albuminuria may follow other forms of specific infection, or even, though rarely, arise as the end-result of a mild acute nephritis of ordinary type. The proportions of serum globulin and serum albumin are not constant in cases either of orthostatic or nephritic albuminuria, and do not enable a differential diagnosis to be made. It is suggested that in many cases the orthostatic reaction is the result of slight renal damage. But cases probably exist in which the reaction is the result of mechanical causes. As a matter of speculation, it is suggested that in these cases the albumin comes from one kidney only. Some response to posture occurs in most cases of nephritis and possibly in all forms of albuminuria. All degrees of diminution of the output of albumin during rest in bed are met with, down to the complete cessation of the typical orthostatic cases. Orthostatic albuminuria is probably of more frequent occurrence than is generally supposed. It may pass unrecognized owing to (1) the presence of a small quantity of albumin in the morning specimen of urine due to the continuance of the upright albuminuria for half an hour or so after going to bed the night before and the consequent contamination of the night's collection; (2) the cessation of albumin excretion during diuresis, even in the upright position, and (3) the cessation of albumin excretion in the sitting position. Extreme variations in the albumin output, with at times complete cessation, are therefore to be expected.

Rheumatic Disease in Childhood.—The Horsdall hospital wards of St. Mary's Home, Broadstairs, have since 1921 admitted ninety-two cases of rheumatism, carditis and chorea. Their treatment has been the provision of fresh air, sunlight, warmth and good food, combined with an amount of rest varying in accordance with the amount of active infection. This entails regular medical supervision and food nursing management to insure contentment of the children while under considerable restraint. The treatment aims at preventing or arresting the progress of rheumatic infection, especially in the heart. At the end of certain periods, depending at best on clinical and at worst on financial considerations, the children are returned home. Subsequently, by means of circulars, the discharged patients are sent for and reexamined in London. Raven reports very favorable results in these cases.

Archives Médicales Belges, Brussels

78: 1-53 (Jan.) 1925

Diet in Heart Disease. Lombard.—p. 1.
*Calcium Chlorid in Exudative Pleurisy. Thoné.—p. 11.

Calcium Chlorid in Treatment of Exudative Pleurisy.—Thoné applied calcium chlorid in treatment of twenty-three patients with serofibrinous pleurisy. In eleven cases the fever subsided and the effusion disappeared in three to six days after beginning the treatment and there has been no recurrence of either fever or effusion. The improvement was slower in five other patients, and no effect was noted in four to whom the calcium chlorid was given on the eighth or tenth day of the disease. The best results were apparently obtained in tuberculous pleurisy. This treatment is based on the elimination of the sodium ions and subsequent dehydration, and their replacement by the calcium ions. Therefore the diet should be sodium-free so far as possible. A dose of 15 gm. of calcium chlorid is given the first day; if the fever persists, it is increased to 22 gm. by the third day, and continued for two or three days. Otherwise, only 7.5 gm. is given the second day. Even the large doses were well tolerated. He adds that calcium chlorid treatment proved effectual also in Garoféano's two cases of tuberculous exudative peritonitis.

Bulletin de l'Académie de Médecine, Paris

94: 855-878 (Oct. 6) 1925

Necessity for Study of Ways and Means to Make Railroad Travel Safer. M. de Fleury.—p. 865.
Occupational Injury from Handling Cement. M. Baudouin.—p. 869.
Hyperepinephrinemia and Cerebral Embolism. A. Tournade.—p. 875.

94: 879-900 (Oct. 13) 1925

Case of Calculi in Both Kidneys. P. Bazy.—p. 881.
*Operation for Angina Pectoris. Daniélopolu and Marcu.—p. 884.
Two Cases of a Pulmonary Mycosis, n. sp. A. and R. Sartory.—p. 893.
Hydatid Cysts of the Pancreas. Auvray.—p. 894.
Uremia After Intraspinal Anesthesia. J. Abadie.—p. 897.

Surgical Treatment of Angina Pectoris.—Daniélopolu and Marcu's experiments on dogs as well as postoperative observation of clinical cases of angina pectoris demonstrated that removal of the stellate ganglion induces grave changes in the electrocardiogram. The phenomena show pronounced disturbances of ventricular conductibility, and degeneration of the myocardium. Jonnesco's operation in which, besides the cervical also the stellate ganglion is removed, is too dangerous. They advise a technic which, although suppressing a large number of cardio-aortic sensory fibers, does not damage the important centrifugal fibers that traverse the stellate ganglion.

Bulletin Médical, Paris

39: 1065-1084 (Oct. 3) 1925

Drug Addiction and the Will Power. A. Rodiet.—p. 1071.
Prevention of Postoperative Hemorrhage with Prostatectomy. R. de Butler d'Ormond.—p. 1072.
*Acute Intestinal Invagination in Infants. A. Tierny.—p. 1073.
Colloidal Extract of Tubercle Bacilli in Treatment of Surgical Tuberculosis. Grimberg.—p. 1073.

Acute Intestinal Intussusception in Infants.—Tierny believes that this may be due to a congenital predisposition the same as hypertrophy of the pylorus. It occurs chiefly in apparently healthy boys, aged from 4 to 7 months. The operation succeeds in 90 per cent. of the cases if it is made within twenty hours. Death may follow in 90 per cent. if it is made later. The child should be under clinical and radiologic surveillance for a few years after recovery so that consecutive intestinal stenosis may be recognized in time.

Bulletins de la Société Médicale des Hôpitaux, Paris

49: 1299-1308 (Oct. 9) 1925

Enchondroma of Right Bronchus. G. Caussade et al.—p. 1299.

49: 1309-1326 (Oct. 16) 1925

*Pineal Tumor in Adult. Alajouanine et al.—p. 1309.
*Associated Hemophilia and Hemogenia. Emile-Weil and Isch-Wall.—p. 1314.
*Wassermann Test in Malignant Endocarditis. Landau and Held.—p. 1322.

Diagnosis of Tumor in Pineal Gland in Adult.—The diagnosis was made by Alajouanine and his co-workers in a man, aged 26. Signs of intracranial hypertension had been noted for three years, gradually progressive irregular headache, dizziness and torpor, with diplopia and other ocular disturbances including paralysis of the motor oculi. Recurring attacks of sudden and profound sleep formed a characteristic feature of the case, preceded by a disagreeable sensation in the supra-orbital region. This syndrome was gradually followed by changes of the hearing, pains of the thalamus type, cerebellar gait and slight trigeminal disorder. The association of ocular motor disturbances and narcolepsy had suggested epidemic encephalitis at first. The symptoms indicated that the tumor was probably located in the area of the corpora quadrigemina. Roentgenograms revealed a calcified tumor of the pineal gland, apparently a teratoma. Immediate decompressive trephining is to be followed by deep radiotherapy of the pineal region.

Associated Hemophilia and Pseudohemophilia.—Emile-Weil and Isch-Wall report two cases, in a boy and in a man, in which phenomena of hemophilia, namely, hematoma, hemarthrosis and retarded blood coagulation coexisted with hemogenia, manifest in the prolonged bleeding time (from twenty minutes to five hours). The disease appeared to be congenital in both, and familial in one of the patients. A similar dual blood condition may be observed in other pathologic conditions, particularly in grave jaundice when hemorrhagic purpura coincides with retarded coagulation of the blood.

Positive Wassermann Test in Slow Malignant Endocarditis.—In Landau and Held's thirty cases of endocarditis lenta the Wassermann test was positive in ten, including six absolutely free from syphilis, as confirmed by clinical examination and necropsy. The differential diagnosis from syphilitic aortitis was based on the fever curve, the secondary anemia, enlargement of the spleen, and history of articular rheumatism. Specific treatment for syphilis provoked aggravation of hemorrhagic nephritis in one of their cases, and of the endocarditis process in Kaldewey and Flatter's patient. The positive Wassermann test in these cases should be considered as an incidental and secondary phenomenon of a disturbed colloid or lipoid balance in the serum.

Marseille Médical

62: 1449-1492 (Sept. 15) 1925

*Arteriosclerosis of the Uterus. P. Moiroud.—p. 1450.
The Anaphylaxis Theory of Menstruation. L. Trifaud.—p. 1453.
Development and Treatment of Extra-Uterine Pregnancy. Arnould.—p. 1466.
Bilateral Extra-Uterine Pregnancy. Robiolis and Henry.—p. 1478.
Tuberculosis of the Adnexa. G. Salen.—p. 1481.

Hemorrhage from Arteriosclerosis of the Uterus.—Moiroud calls attention to these hemorrhages which, although more frequent at the menopause, may occur also in young women. This metrorrhagia should be differentiated from that caused by arterial hypertension. The hemorrhage is the chief symptom; it is persistent and refractory to medical treatment. The diagnosis is based on the absence of positive clinical findings. Dilatation of the capillaries and sclerotic degeneration of the walls of the vessels are the characteristic lesions. Medical treatment is futile, but radium may possibly replace hysterectomy which hitherto has been the only reliance.

Médecine, Paris

6: 909-984 (Sept.) 1925

Biology in 1925. J. Gautrelet.—p. 909.
Importance of Ultrafiltration for Biologic Research. L. Blum and M. Delaville.—p. 917.
*Lactic Acid of Blood under Respiration. Binet and Collazo.—p. 924.
Phosphorus and Carbohydrate Metabolism. H. Bierry.—p. 928.
Rôle of Sodium Chlorid in Vital Phenomena. W. Mestrezat.—p. 930.
Influence on Reproduction of Deficiency in Fat Soluble Vitamin A. H. Simonnet.—p. 935.
Recent Physicochemical Research on Cancer. C. Sannié.—p. 941.
Glycosuria of Tuber Cinereum Origin. A. Le Grand.—p. 947.
Alkali Reserve. P. Delore.—p. 952.
Estimation of Night Sight in Man. J. Beyne.—p. 960.
Carbon Monoxid Poisoning. Dervieux.—p. 965.
*Visualization of the Appendix. Bretton.—p. 970.

Influence of Respiration on Lactic Acid of the Blood.—Binet and Collazo drew blood simultaneously from the right heart and the carotid of chloralosed dogs. An excess of lactic acid (by 3 to 11 mg. per hundred cubic centimeters of blood) was manifest in the blood of the right heart, as com-

pared with that of the left. Asphyxia increased the content of lactic acid (32 mg. before, and 55 mg. six minutes after the beginning of asphyxia). The increase of lactic acid was still manifest for a certain time after the respiration became normal. Panting for ten minutes reduced the amount of lactic acid from 36 to 20 mg.

Atropin as Adjuvant in Visualization of the Appendix.—The appendix was visible in 18 per cent. of Bretton's twenty-two patients with chronic appendicitis, given only a barium sulphate contrast suspension. After atropin had been given, besides, a positive visualization of the appendix was obtained in 50 per cent. of the thirty-six patients. A dose of 1 mg. of atropin, in an enema, the first hour after the barium, appeared to be the best mode of administration as it combats the muscular contraction and allows penetration of the substances into the cavity of the appendix.

Paris Médical

57: 305-328 (Oct. 17) 1925

Psychiatry in 1925. A. Baudouin and N. Péron.—p. 305.
Dementia Praecox and Schizophrenia. H. Claude.—p. 312.
Classification of Cases of Dementia Praecox. Lévy-Valensi.—p. 316.
Phenobarbital in Treatment of Epilepsy. H. Colin.—p. 318.
Prophylactic Mental Hygiene for Children. G. Heuyer.—p. 319.
Abscesses in Morphin Addicts. E. Gelma.—p. 324.

57: 329-344 (Oct. 24) 1925

Therapeutic Meningeal Reactions in Meningococcemia. Merklen et al.—p. 329.
Effects of Lumbar Puncture in Diabetes. F. Rathery and G. Dreyfus-Sée.—p. 333.
*Pituitary Extract in Diabetes Insipidus. Carnot and Péron.—p. 339.
*Epinephrin in Local Anesthesia. B. La Rossa and R. Riccio.—p. 341.

Pituitary Treatment in Diabetes Insipidus.—Carnot and Péron applied the treatment in a man, aged 35, with diabetes insipidus of one year's standing. Subcutaneous injection of 1 c.c. of extract of the posterior pituitary lobe was followed twenty minutes later by allaying of the thirst, and the output of urine was reduced from 6.5 to 2.25 liters within twenty-four hours. Injection of 1 c.c. of extract of the total gland was less effectual, decreasing the daily amount of urine no more than by 2 liters. The action of the extract ceased after twenty hours. Epinephrin and lumbar puncture did not display any influence in this line. An intercurrent sore throat with high fever caused an effect absolutely similar to that from the pituitary extract. The treatment did not modify conditions in a case of diabetes mellitus with pronounced polyuria. A reduction of secretion of urine was obtained under pituitary extract in certain cases of polyuria in nephritis, but the action here was slow and inconstant.

By-Effects of Epinephrin in Local Anesthesia.—La Rossa and Riccio warn not to use epinephrin with procain in local anesthesia since the epinephrin prevents rapid diffusion of the anesthetic. Epinephrin, used in local anesthesia, caused necrosis of the skin and subcutaneous tissue in fourteen cases on record, and in four of their own cases. It also seemed to be responsible for the hemorrhage in eleven cited and two personal cases, and for fever in a total of six cases.

Presse Médicale, Paris

33: 1361-1376 (Oct. 14) 1925

*Electric Tests in Angina Pectoris. R. Leriche.—p. 1361.
*Tartar Emetic in Pulmonary Hemorrhage. Mattei and Escudier.—p. 1361.

Experimental Research on Angina Pectoris.—Leriche made some of his experiments on a man under local anesthesia, induced for sympathectomy. The anesthetic had not been given deep enough to affect the sympathetic. Subsequent electrization of the left stellate ganglion caused intense pain and oppression in the precordial region and first two or three intercostal spaces. The patient had never had attacks of angina pectoris. The phenomena subsided at once after injection of procain in the same ganglion. In two other cases an electric current applied to the upper part of the left first thoracic ganglion caused sharp pain in the corresponding arm. Applied to the lower part of the ganglion, it caused pain in the heart region. Identical phenomena appeared on squeezing the ganglion, but less pronounced. An attack of angina pectoris occurred in a woman during sympathectomy performed for angina pectoris. The paroxysm ceased immediately after an injection of procain in the left inferior cervical ganglion, although the rami communicantes had not been severed. These facts throw light on the mechanism and treatment of the paroxysm in angina pectoris.

Arrest of Tuberculous Hemoptysis with Tartar Emetic by the Mouth.—Mattei and Escudier obtained successful results in eleven cases of grave pulmonary tuberculosis with rebelliously recurring hemorrhages. Pills containing from 0.02 to 0.05 gm. of antimony and potassium tartrate, mixed with 0.01 gm. of extract of opium, were given with water an hour before or after meals. The total daily dose was from 0.05 to 0.15 gm.; the treatment was usually continued for five days. In one case the treatment was required for ten days, while in two others one day sufficed. The total of 0.89 gm. was never surpassed in ten days; and the treatment was not resumed before five or six days. A single dose of 0.05 gm. checked the hemoptysis in most cases within a few minutes. In eight cases, briefly transient nausea appeared before the hemorrhage stopped, with vomiting in four. The drug seemed to exert little effect on the arterial pressure, pulse and fever. The appetite did not decrease. The restriction of the diet to iced milk was prolonged for two days after the hemorrhage ended. The treatment proved to be harmless. The drug possibly may induce a vasomotor reflex, of gastric origin, in the lung vessels, while exerting a depressing action on the right heart, as well as a direct action on the smooth fibers of the lung vessels.

33: 1377-1392 (Oct. 17) 1925

*Hay's Test and Liver Insufficiency. E. Doumer.—p. 1377.
*Venous and Arterial Pressure. M. Hélouin.—p. 1378.
Radiations in Biology: Phototherapy. J. L. Pech.—p. 1387.

Hay's Test Does Not Show Liver Insufficiency.—Doumer tested by Hay's method the urine of ten patients. He concludes that a positive Hay's test does not prove the presence of biliary salts in the urine, since it may occur in persons with normal functioning of the liver. Therefore the theory of dissociated jaundice, especially so far as the bile salts are concerned, should be reconsidered. He has never encountered a case of true dissociated jaundice.

Correlation of Venous and Arterial Pressures.—Estimation of the venous pressure was made by Hélouin, in the last two years, in all patients from whom blood was taken for serodiagnosis. In normal conditions the venous pressure appeared to be about one thirteenth of the systolic arterial pressure. In fifty cases, arterial hypotension was accompanied by venous hypertension. Arterial hypotension associated with venous hypertension was noted in anemia and pretuberculous or tuberculous conditions. A moderate venous hypertension in these cases indicated that the heart functioning was intact, while a high hypertension proved to be a sign of cardiac insufficiency. A normal or slightly lowered venous tension with arterial hypertension was a sign of good compensation on the part of the heart, while high venous tension testified to cardiac insufficiency. Determination of the venous pressure may thus help in diagnosis and treatment.

33: 1393-1408 (Oct. 21) 1925

*Bacteriophage Treatment of Plague. F. d'Herelle.—p. 1393.
*Means to Influence Absorption. L. Binet.—p. 1394.

The Bacteriophage in Treatment of Plague.—D'Herelle reports four cases of bubonic plague treated exclusively by injection of a bacteriophage into the buboes. To 10 c.c. of a bouillon culture of the plague bacillus was added 3 c.c. of fresh bouillon, and it was inoculated with a bacteriophage culture. A dose of 1 c.c. of the filtrate was injected in one bubo; or two injections, each of 0.5 c.c., were given in two buboes. In three patients injected the first day after appearance of a bubo, the general condition improved within a few hours after the injection. Two injections were needed in a case in which the treatment was not started until the third day of the disease. All were grave cases and all rapidly recovered. No other treatment was applied, but the bacteriophage was known to be exceptionally active. D'Herelle suggests to inject 1 or 2 c.c. into the buboes in dubious cases of plague, since it is absolutely harmless. In septicemic and pneumonic plague the injection should be made intravenously.

The heading of the article states that d'Herelle is director of the bacteriologic department of the public health service in Egypt. See also Paris Letter, p. 1653.

Absorbing Properties of Subcutaneous Tissue.—Binet summarizes Beverly Douglas' recent experiments on rabbits, guinea-pigs and frogs which proved that application of strychnin to the abraded skin failed to induce the usual convulsions in the animals, if a concentrated solution of epinephrin (1:10,000) had been previously applied to the abrasion. Blocking of absorption occurred also with dyes. Opposite results were obtained with a preceding application of histamin. The power of absorption of the subcutaneous tissue was evidently connected with the vasoconstrictor or vasodilator action of these substances. Binet adds, "What a host of practical deductions can be drawn from this physiologic research!"

Revue Française de Pédiatrie, Paris

1: 261-408 (Sept.) 1925

Syphilis of Long Bones in Infants. Péhu and Enselme.—p. 261.
*Alkali Reserve in Tetany of Infants. Rohmer and Woringer.——p. 290.
The Blood of Infants. Lesné and Langle.—p. 300.
Recent Works on Pediatrics in Italy. Péhu.—p. 343.
Idem in Anglo-American Literature. E. A. Park.—p. 372. C'en.
Recent German Works on Intestinal Flora in Infants. V. Berg.—p. 397.

Alkali Reserve in Spasmophilia of Infants.—Rohmer and Woringer's research was made on twenty-one infants with spasmophilia (manifest in fifteen and latent in six), and seventeen other infants with rickets but no signs of spasmophilia. A marked reduction of the alkali reserve was found in most cases of manifest spasmophilia, before as well as during and after an attack. The decrease of the alkali reserve was less pronounced in latent tetany and in rickets. There were no further convulsions after seven daily exposures to ultraviolet rays, and the overexcitability of the nerves and muscles subsided by the third week. The amount of calcium in the blood increased at the same time, becoming normal after twelve or fifteen exposures.

Schweizerische medizinische Wochenschrift, Basel

55: 929-948 (Oct. 8) 1925

*Switzerland in Development of Medicine. H. E. Sigerist.—p. 929.
*Tuberculosis in Early Childhood. W. Tobler.—p. 932.
Surgical Treatment of Exophthalmic Goiter. W. Isler.—p. 938.
Neutrophils in Pulmonary Tuberculosis. J. Stephani.—p. 940.
Swiss Law on Narcotics. H. W. Maier.—p. 941.

Switzerland in Development of Medicine.—Sigerist outlines the history of medicine with special regard to Switzerland. He believes that the sober nature and lack of luxury account for the absence of genius among Swiss medical men, but he shows the important rôle played by Switzerland in the interchange of ideas and the training of practitioners.

Tuberculosis in Early Childhood.—Tobler discusses the prevention of tuberculosis. Exposure to this infection is the most important factor to be heeded. The so-called cured pulmonary tuberculosis of the adult is frequently a source of infection for the child. He has occasionally had difficulty himself in weeding out from the infants' department certain nurses who had been repeatedly treated in sanatoriums and were still coughing.

55: 949-972 (Oct. 15) 1925

Operation for Cataract. Vogt.—p. 949.
Physical Diagnosis of Pulmonary Tuberculosis. F. Oeri.—p. 951.
Alimentary Anaphylaxis. J. E. Wolf.—p. 955.
*Antigenic Function of Lipoids. R. Doerr and C. Hallauer.—p. 962.
*Action of Insulin. A. Gigon.—p. 968.

Antigenic Function of Lipoids.—Doerr and Hallauer were able to change Forssman's lipoid into a full antigen not only with pig serum but with any other protein, including those from the organs and hemolyzed erythrocytes from rabbits. The fact that intact erythrocytes do not produce the change, speaks, among other facts, against Landsteiner and Simms' hypothesis of the mere strengthening of the "ictus immunisatorius," and speaks for a real chemical combination of the lipoid and protein. These experiments confirm Wolff-Eisner's theory on the mechanism of iodin idiosyncrasy (by coupling with a protein).

Action of Insulin.—Gigon found after injections of insulin a marked decrease of the total carbon in blood (from 10.5 per cent. to 9.1 per cent.) and muscles and an increase in the liver. The water content fell in the liver and rose in the muscles. He finds that the changes in the carbon content cannot be satisfactorily accounted for by changes in the glucose and glycogen content. The research was done on rabbits.

Pediatria, Naples

33: 1085-1140 (Oct. 15) 1925

Types of Constitutional Differences. S. Maggiore.—p. 1085.
*The Diplococcus in Pleurisy. R. Pastore.—p. 1097.
Psoriasis in Children. A. F. Canelli.—p. 1111.
Complicating Infection in Scarlet Fever. Sindoni and Guccione.—p. 1117.
Teething Disturbances. A. Laurinsich.—p. 1123.

The Diplococcus in Pleurisy.—Pastore isolated from pleuritic exudates a diplococcus which is nearer to the streptococcus than to the classic Fränkel type. Yet she concludes that they are identical and only modified by the tissue which they attack.

Riforma Medica, Naples

41: 913-936 (Sept. 28) 1925

*Wassermann Reaction with Serum from Blisters. P. Serra-Costa.—p. 913.
Calculosis of the Prostate. G. Balice.—p. 917.
*Much's Granules. P. F. Zuccòla.—p. 918.
Medical Jurisprudence. R. Pellegrini.—p. 929.

Wassermann Reaction with Serum from Blisters.—In forty-four subjects Serra-Costa made a comparison between the Wassermann reaction with the blood serum and with the fluid from blisters produced by the application of a cantharides plaster. The results were practically identical. This may prove of advantage in securing material from infants.

Much's Granules.—Zuccòla admits that Much's granular form predominates in beginning tuberculosis and in the forms with a favorable prognosis.

41: 937-960 (Oct. 5) 1925

*The Blood Minerals in Cancer. R. Paolucci.—p. 937.
Serologic Changes During Therapeutic Pneumothorax. Marotta.—p. 939.
Acidosis and the Alkali Reserve. L. Manfredi.—p. 941.

The Blood Minerals in Cancer.—Paolucci found only a negligible lowering, if any, of the calcium content in the blood in cancer patients. With extensive metastasis, the hypocalcemia was distinct. Roentgen treatment lowered at first and later increased the blood calcium.

Boletin de la Soc. de Cirugía de Chile, Santiago

3: 193-215 (Aug. 26) 1925

Minor Fractures of the Elbow. J. Bronfman.—p. 193.
Destruction of Semilunar Cartilage in Knee from Indirect Trauma. Basilio Muñoz P.—p. 199.
*Dermoid Cyst of the Thyroid. E. Greene O.—p. 201.
The Polya-Balfour Partial Gastrectomy for Cancer. M. Matus M.—p. 203.
Cancer of the Stomach. A. Constant and J. Rodriguez.—p. 210.

Dermoid Cyst in the Thyroid.—Not a trace of thyroid or parathyroid tissue was found in a cyst, about the size of a small orange, extirpated from the thyroid of a girl of 16. A tumor had been noted in the region since the age of 10, but there was no pain. The girl presented nocturnal palpitations and tremor and she complained of some discomfort from the tumor at night. The microscope revealed that the parts of the cyst examined were made up exclusively of skin tissue and sebaceous glands. Greene says that he has been unable to find any record in the literature of a dermoid cyst in the thyroid.

Crónica Médico-Quirúrgica, Havana

51: 335-398 (Sept.) 1925

Treatment of Cancer. A. G. Domínguez.—p. 336.
Narcotic Addiction in Cuba. Official Report. M. A. Branly.—p. 345.
Artificial Respiration and Means for Resuscitation in Treatment of Shock. L. Hevia.—p. 357.
Hygiene in Sugar Plantations. O. Morales y Patiño.—p. 367.
*Anomalous Forms of Malaria. Leandro Cejas.—p. 378.
*Encysted Gauze Sponge on Spermatic Cord. J. Lastra.—p. 384.
Functional Mitral Stenosis. F. Rodriguez.—p. 385.

Unusual Forms of Malaria.—Cejas says that in his district fully 60 per cent. of all the patients he has encountered in eight years of practice had the malarial parasite in their blood. The manifestations of malaria often simulated almost

any other disease. The mild masked forms may be predominantly gastric, neuralgic, neurotic, hepatic or hepatosplenic, while the grave, pernicious forms may assume a cerebral, comatose aspect. Of the graver types, the cerebral form with convulsions is most common in Cuba, particularly in children, and this is especially liable to entail blunders in the diagnosis. Muscular contracture and trismus in certain cases suggested acute tetanus. Many cases of sudden death in coma, attributed to cerebral hemorrhage, are in reality due to cerebral malaria.

Encysted Sponge Simulating Tumor of Spermatic Cord.—The gauze had been left in the abdomen during a herniotomy three years before. The diagnosis was "recurrence of the hernia and solid tumor of the cord."

Prensa Médica, Buenos Aires

12: 377-424 (Sept. 20) 1925

*Modified Technic for Sympathectomy. Julio Diez.—p. 377.
*Ichthyosis and the Sympathetic System. Castex and Camauer.—p. 404.
Irritation in Connection with Cancer. G. Fichera.—p. 418.

12: 425-460 (Sept. 30) 1925

The Giardia Intestinalis in Disease of Biliary Tract. M. R. Castex and J. C. Galán.—p. 425.
Hypercreatininemia and Its Clinical Import. O. Catalano.—p. 428.
"Syphilis and Banti's Disease." L. L. Resio.—p. 443.
Cosmetic Plastic Operations on the Nose. J. Basavilbaso.—p. 445.
Embryonal Tissues and Cancer Diathesis. G. Fichera.—p. 446.

Sympathectomy in Treatment of Gangrenous and Trophic Lesions on the Extremities.—Diez' profusely illustrated article describes his technic and the excellent results of resection of the sympathetic in the sacrolumbar region or of the chain in the cervicothoracic in twenty-seven patients. Obliterating thrombo-angeitis formed the majority of the cases, but the list included gangrenous processes, habitual acrocyanosis, causalgia, mal perforant, etc. The immediate result was the reduction or total disappearance of the pain. No benefit was derived in five cases, including four of obliterating thromboangeitis (three in syphilitics) and one of arteriosclerotic acrocyanosis. He insists that his method of resection of the sympathetic chain in the upper thorax or sacrolumbar region has decided advantages over periarterial sympathectomy, and over Diez' own method of dissociation of nerve fibers which he published in 1924. The extensive resection which he now practices aims to destroy as much as possible of the vasomotor nerves of the limbs, leaving to the arteries merely their own natural tonus. He thinks that it might suffice to resect the stellate ganglion alone in treatment of trophic or gangrenous lesions on the arms, but he has found it more convenient and regards it as safer to resect with it the middle and inferior ganglions and the intermediate nerve trunk, the latter leading directly to the stellate ganglion. For the leg, he resects the nerve from the second lumbar ganglion to the third sacral. His localization of the vasomotor centers in this region was more anatomic than functional, but the functional outcome has confirmed the accuracy of his deductions. The improvement in the circulation is prompt and far beyond that realized by the other types of sympathectomy. Among his illustrations are two showing an acute Dinkler trophoneurotic gangrenous patch on the heel, consecutive to periarterial sympathectomy on the femoral artery, done to relieve acrocyanosis. The lesion had persisted for a year, rebellious to all measures, but healed with scarcely a trace left in four weeks after the sacrolumbar operation.

Ichthyosis and the Sympathetic.—This instalment of Castex and Camauer's study of the sympathetic from the clinical standpoint is devoted to ichthyosis. They apparently prove—by the three cases reported—that this is a manifestation of abnormal conditions in the vegetative nervous system. Treatment should be addressed to the primary etiologic factors, the upset of the balance in the vegetative nervous system, as systematically as to the skin.

Revista de la Soc. Arg. de Biología, Buenos Aires

1: 291-334 (July) 1925

*Familial Xanthoma. J. Llambías and A. Celesia.—p. 291.
Transmission of Acquired Characters. J. Llambías and D. Brachetto Brian.—p. 299. See abstract, page 1593.
Tuberculous Mesenteric Glands in Child. Acuña et al.—p. 301.
Staining of Ameba in Sections. Ramirez Corria.—p. 310.
Phenomena of Nerve Regeneration and of Softening of Brain Tissue. P. del Rio Hortega.—p. 318.
European Foci of Bilharziosis of the Bladder. Bacigalupo.—p. 324.
*Technic for Capillarography. A. Lacroze.—p. 330.

Familial Xanthoma.—Llambías and Celesia report a case of recurring xanthomas in a young man. Some were removed from the eye, elbows, knees, fingers and toes. The mother had flat xanthelasmas at the angle of both eyes and the father presented a lipoma in the epigastrium. Five of the eight brothers of the young man also developed xanthomas at various points.

Research on the Capillaries.—Lacroze gives illustrations of his device to facilitate capillarography. One wooden block supports the hand and arm, a second block holds the electric light. The pressure on the finger is adjusted with a micrometric thumbscrew, immobilizing the finger without impeding the circulation.

Revista de la Soc. Arg. de Tisiología, Buenos Aires

1: 1-28 (Aug.) 1925

Tuberculosis and Pregnancy. Therapeutic Pneumothorax in the Pregnant and Parturients. A. A. Raimondi and T. González.—p. 1.
*Conjunctivitis in the Tuberculous. I. Lijó Pavía.—p. 14.
Pulmonary Tuberculosis and Diabetes. Associated Therapeutic Pneumothorax and Insulin Treatment. R. A. Izzo.—p. 21.

Etiology of Conjunctivitis with Small Follicles: Its Frequency in the Tuberculous.—Lijó Pavía called attention last year to a mild chronic conjunctivitis of the eyelids with disseminated minute follicles. He claimed that it had not been described before. He now asserts that he found this conjunctivitis in 75 per cent. of 280 hospitalized tuberculous patients and in 83 per cent. of 134 applying for dispensary treatment.

Revista de la Soc. de Med. Interna, Buenos Aires

6: 307-340 (Aug.) 1925

*Creatin and Creatinin in Nephritis. Bonorino Udaondo and Catalano. p. 307.
*Diabetes Refractory to Insulin. Pedro Escudero.—p. 312.
*Cancer of the Larynx. Jorge Leyro Díaz.—p. 322.
Roentgenology of Subphrenic Pyopneumocyst. Castex et al.—p. 333.

Creatin and Creatinin in the Blood in Nephritis.—The creatin content of the blood in fifty patients with kidney disease, whatever its nature, ranged from 1.4 to 10.5 mg. per hundred cubic centimeters of blood, and from traces to 0.4 per thousand in the urine. The corresponding figures for creatinin were from 1.5 to 6.7 in the blood and from 0.3 to 2 in the urine. In twenty normal persons the creatininemia ranged from 0.9 to 1.2 mg. The average of creatinemia was 3.2 mg. Bonorino Udaondo and Catalano tabulate the details of the cases, classified by the nature of the nephritis, and emphasize the lack of concordance between retention of nitrogen and of creatin and creatinin. The creatinemia and creatininemia were moderate in the fatal cases, while the highest retention of creatinin (6.7 mg.) was in two patients with discrete nephrosclerosis who left the hospital much improved.

Diabetes Refractory to Insulin.—Escudero reiterates that the insulin is not responsible for the lack of benefit; the organism is incapable of utilizing it, perhaps owing to the absence of ferments on which the insulin acts. Sometimes, however, the drug may be given at the wrong times in respect to the meals. In two cases described, reducing the amount of proteins allowed full utilization of the insulin, ineffectual before. In another case the tolerance for carbohydrates was temporarily reduced during periods of transient weakening of the heart action.

Denunciation of Tracheotomy with Cancer of the Larynx.—Leyro Díaz' experience with 165 cases of cancer of the larynx has convinced him that laryngectomy, total or partial, done in time, has an encouraging outlook. Only thirty of his patients were operable when first seen, and of these twenty-nine are still living up to two or three years after the laryngectomy, one succumbing to pneumonia. The majority of the others, he says, had consulted physicians in time for radical treatment to have been successful, but none

of the physicians suggested laryngectomy. He denounces tracheotomy as worse than futile, while it delays and hampers effectual measures. Fifty-four of the total 165 had been tracheotomized, and two of them committed suicide.

Klinische Wochenschrift, Berlin

4: 1993-2040 (Oct. 15) 1925

*Hypertonia of Smooth Muscles as Cause of Disease. J. Pal.—p. 1993
*Diseases Due to Spirochetes. G. Steiner and J. Steinfeld.—p. 1995.
Auricular Fibrillation. W. von Kapff.—p. 1997.
*Ovarian Preparations. B. Zondek and H. Bernhardt.—p. 2001.
*Prognosis of Diabetes Under Treatment. O. Fischer.—p. 2002.
*The Hyperemia Reaction After Induced Ischemia. E. Wehner.—p. 2005.
Biliary Stasis and Pregnancy. V. Hoffmann.—p. 2008.
Rabl's Method of Precipitation of Lime. R. Böhmig.—p. 2010.
*Circulating Heavy Metals. T. Komiyama.—p. 2012.
*Phagocytic Leukocytes. Bierstein and Rabinovitsch.—p. 2013.
Dual Phase Action of Hormones. H. Zondek and H. Ucko.—p. 2014.
*Calcium Versus Strontium. S. Hirsch and A. Oppenheimer.—p. 2015.
Cultivation of Spirochaeta Pallida. Aristowsky and Hoeltzer.—p. 2016.
*Diabetes and Puberty. Heimann-Trosien and Hirsch-Kauffmann.—p. 2016.
*Surgical Treatment of Peptic Ulcers. H. Finsterer.—p. 2017.
The Hamburg Institute for Ship and Tropical Diseases. Schilling.—p. 2038.

Hypertonia of Smooth Muscle as Cause of Disease.—Pal regards the "hypertonic attitude" of smooth muscle (of the arteries and of the gastro-intestinal tract) as a form of pathologic dissociation between their kinetic and tonic function. It is a neurosis, and the cause of later anatomic changes in the organs, especially the kidneys. In the early stages, a symptomatic treatment, including psychotherapy, is of value. He is pessimistic in regard to the later stages. Venesection should be used only in an acute rise in blood pressure.

Diseases Due to Spirochetes.—Steiner and Steinfeld found only a weak production of antibodies in the blood of rats inoculated with brain tissue from other rats with experimental recurrent fever. The smallest protecting dose of the serum from rats inoculated with blood was 0.2 c.c. (against 0.1 c.c. of spirochetes). The spirochetes which persisted in the brain of animals that had been inoculated with recurrens, were killed by the serum. Consequently they were not serum-fast.

Standardization of Ovarian Preparations.—Zondek and Bernhardt test ovarian preparations by the increase in basal metabolism (up to 15 per cent.) which they cause in castrated women. The authors emphasize the caution necessary in desiccating the substance.

Prognosis of Diabetes Under Insulin Treatment.—Fischer states that insulin has improved the prognosis chiefly in acute dangerous conditions in diabetes. Precoma, and even coma and surgical interventions have lost much of their danger. Yet the general prognosis has not been materially modified.

The Hyperemia Reaction After Induced Ischemia.—Wehner found a smaller beat volume and lower pressure at the radial artery during the hyperemia phase following constriction of the artery. The previous condition was restored after 75-100 beats. Thus the reactive hyperemia is due only to a dilatation of the capillaries. This accounts also for the lowered pressure in the artery supplying the region (lowered peripheral resistance).

Circulating Heavy Metals.—Komiyama modified Sabbatani's experiment for determination of the presence of heavy metals in the circulation. He injected subcutaneously on one leg an emulsion of sulphur, and, on the other leg, an insoluble bismuth preparation. The sulphur stained the tissues dark, thus indicating that it had caught the heavy metal from the circulation. The result was positive also with inunction of a bismuth ointment.

Phagocytic Function of Leukocytes.—Bierstein and Rabinovitsch extirpated the thymus, thyroid or testis in rabbits, and tested thereafter the phagocytic function of the washed leukocytes from a sterile peritoneal exudate. In the controls, about 36.6 per cent. of the cells contained particles of charcoal. After extirpation of the thymus, the index was 27.2. The extirpation of the thyroid or testis had a still greater influence, the average index being below 19, and falling as time went on. Reimplantation of the gland several months later increased the index, although not to the original value. The opsonic influence of the exudate fluid was eliminated by the washing of the cells.

Substitution of Calcium by Strontium.—Hirsch and Oppenheimer found that strontium is not a full substitute for calcium in perfusion experiments on frogs' hearts.

Diabetes and Puberty.—Heiman-Trosien and Hirsch-Kauffmann's patient was a girl, 14 years of age, who recovered from coma under insulin treatment. The glycemia and glycosuria disappeared, while the patient's body showed the signs of beginning puberty (except menstruation).

Surgical Treatment of Peptic Ulcers.—Finsterer reviews the methods and results of surgical treatment of ulcers of the stomach and duodenum. His own guiding principle is that resection is essential in ulcers of the stomach—not only because of the better results, but also because of the comparatively frequent development of cancer, and the impossibility of diagnosing it without microscopic sections. In ulcers of the duodenum, his method of choice is resection of the ulcer, pylorus and two thirds of the stomach. If the ulcer cannot be removed, he resects an even larger part of the stomach. Gastro-enterostomy is reserved only for old people. He requires more and longer observation to decide the question whether the smaller resection with direct uniting of the stomach and duodenum is better than more extensive resection with the modified Billroth II procedure.

Medizinische Klinik, Berlin

21: 1561-1598 (Oct. 16) 1925

*Neurodermitis, Eczema and Internal Disease. S. Ehrmann.—p. 1561.
Topovaccinotherapy in Surgery. J. Citron and H. Picard.—p. 1564.
Myalgia. F. Plate.—p. 1567.
*Intestinal Origin of Pernicious Anemia. W. Jülich.—p. 1570.
Cosmetic Surgery of the Nose. E. Wodak.—p. 1573.
Hypertension. F. Wagner.—p. 1575.
Scaphoid Scapula. Friedel.—p. 1577.
Diseases of Joints. E. Maliwa.—p. 1578.
*Electrolytes and Hormones. E. Kylin.—p. 1580.
*Laryngotracheal Breathing Sound. A. Winkler.—p. 1581.
Pathology of Congenital Syphilis. S. Gräff.—p. 1584.
T. Mann's "Zauberberg." E. Stern.—p. 1594.

Neurodermitis, Eczema and Internal Disease.—Ehrmann deals with chronic lichen, which he calls a circumscribed neurodermitis. It begins with itching, then—sometimes not until after years—broad hives appear at the sides and back of the neck. The skin begins to scale and a nummular eczema and pigmentation remain. Urticaria factitia (not a simple red dermography) may be provoked even in the earliest stage. More than 50 per cent. of these patients have gastric achylia or hypochylia, and respond well to treatment with hydrochloric acid. Others have changes in the duodenum, and especially in the appendix or colon. Endocrine glands may be affected in another group.

Intestinal Origin of Pernicious Anemia.—Jülich made cultures from the duodenum of ninety-eight patients, including seventeen with pernicious anemia. Colon bacilli were present in fifteen of the latter group at the first examination; in two at other times. Yet he found them also in more than a third of the controls. Disease of the duodenum or gallbladder seemed to be a predisposing factor. He admits the possibility that achylia is one of the causes of the ascending colon flora, but thinks that injury of the intestine by the anemia contributes to it also.

Electrolytes and Hormones.—Kylin injected 1 gm. of calcium chlorid or 0.1 to 0.2 gm. of potassium chlorid intravenously, and an hour or two later injected pituitary extract, epinephrin or insulin. He found that calcium enhances the rising pressure phase of the epinephrin, but weakens the hypoglycemia phase of insulin action, and the hyperglycemia phase of pituitary extract. Potassium acts the opposite.

Laryngotracheal Breathing Sound.—Winkler concludes from his experiments on models that the character and expiratory accentuation of the laryngotracheal breathing sound are due to the stream of air at the bifurcation. The glottis only strengthens the sound.

Münchener medizinische Wochenschrift, Munich

72: 1767-1814 (Oct. 16) 1925

Surgical Treatment of Sterility. A. Mayer.—p. 1767.
Radium Treatment of Cancer of Uterine Cervix. E. Philipp.—p. 1769.
Medicine and the Cosmos. E. Stern.—p. 1771.
*The Heart Muscle After Sympathectomy. B. Brandsburg.—p. 1775.

*Sauerbruch's Method in Amputations of the Arm. Pürckhauer.—p. 1777.
*Bezssonoff's Reagent for Vitamin C. E. Loewy.—p. 1780.
Filter Assurance in Roentgen-Ray Treatment. J. Klein and G. H. Klövekorn.—p. 1782.
*Venereal Diseases in Russia. H. Haustein.—p. 1783.
Pseudofractures. F. Honigmann.—p. 1789.
Apophysitis of Calcaneum. F. Scheid.—p. 1792.
*Pathogenesis of Megacolon. K. Wachendorf.—p. 1793.
*Puncture of the Sagittal Sinus. O. Herz.—p. 1794.
Weight-Bearing Disturbances with Artificial Limbs. Koetzle.—p. 1795.
Sesquicentennial of Itard. H. Schröder.—p. 1795.
Medical Secrecy. L. Schätz.—p. 1797. C'en.

The Heart Muscle After Sympathectomy.—Brandsburg investigated in dogs and rabbits the histologic changes in the heart muscle after sympathectomy. The operation is immediatedly followed by dilatation of vessels, hyperemia, edema, round-cell infiltration and a beginning degeneration of the muscle. The degenerative changes—especially loss of striation, etc.—are still more pronounced after four months. They are limited to the innervated part in unilateral resections. Resection of the depressor nerve in rabbits produced only slight changes. He would therefore prefer this operation—provided the therapeutic effect is good—to sympathectomy, against which he cautions.

Sauerbruch's Method in Amputations of the Arm.—Pürckhauer has been investigating the remote results of Sauerbruch's method in sixty-eight men. Only twenty-one of them are still using the tunnel through the muscles—but these consist chiefly of the "white collar" men. The majority gave up using the prosthesis because of suppuration and pains in the tunnel and loss of strength. They refuse a new operation, which is not to be wondered at since some of them have been operated on three to six times. Most of his patients had been operated on by Sauerbruch personally, and had received a prosthesis from his plant. The results are distinctly worse now than a year ago. Pürckhauer denies absolutely the possibility that Sauerbruch's method would be of any permanent value to a heavy worker.

Bezssonoff's Reagent for Vitamin C.—Loewy confirms in a general way the usefulness of Bezssonoff's simple chemical test for the antiscorbutic vitamin. The reaction was always positive with material containing large amounts of vitamin C.

Venereal Diseases in Russia.—Haustein describes the organization of the fight against venereal diseases in Soviet Russia, and the laws concerning sexual delinquencies.

Pathogenesis of Megacolon.—Wachendorf comments on a typical case of Hirschsprung's disease in a girl, 9 years of age. The child had been operated on eight years before for prolapse of the rectum by introduction of Thiersch's ring. By an accumulation of circumstances (death of mother, war, with killing of father and military service of surgeon), the ring was left in place. The child recovered completely.

Puncture of the Sinus.—After having had excellent results with puncture of the sagittal sinus in 300 infants, Herz observed an instance of a fatal subdural hemorrhage. He rejects therefore the method for diagnostic purposes, and reserves it only as the last resource for therapeutic injections.

Wiener klinische Wochenschrift, Vienna

38: 1099-1122 (Oct. 8) 1925

*Action of Roentgen Rays. G. Holzknecht and F. Pordes.—p. 1099.
Dangers of Iodin in Hyperthyroses. F. Redlich.—p. 1102.
Psychogenesis of Leukorrhea. A. Mayer.—p. 1106.
*Diabetes and Pregnancy. A. Springer.—p. 1108.
*The Liver and the Protein Quotient of the Serum. Fillinski.—p. 1110.
Chalazion. F. Schubert.—p. 1111.
*Cumulation or Insulin Habit? K. Waltner.—p. 1112.
*Intravenous Injection of Congo Red. Schönberger and Rosenblatt.—p. 1113.
Dietotherapy of Tuberculosis. M. Weiss.—p. 1114.

Action of Roentgen Rays.—Holzknecht and Pordes criticize the theory of a stimulating action by small doses of roentgen rays. They have been unable to find any fact which would support this theory, and many facts which are against it.

Diabetes and Pregnancy.—Springer discusses the reciprocal relations between pregnancy and diabetes. The diabetes seems to become graver after a pregnancy. The fetus is frequently abnormally large. Premature delivery or cesarean section may be indicated.

The Liver and the Protein Quotient of the Serum.—Fillinski found that in normal serums the globulin content does not make more than 40 per cent. of the proteins. In mild forms of insufficiency of the liver, its proportion rises to 50 per cent. In grave forms it reached 60-70 per cent. or more. Yet it was normal in a case of acute phosphorus poisoning, and in a case of fatty degeneration of the liver in sepsis.

Cumulation or Insulin Habit.—Waltner injected young rats daily with nontoxic doses of insulin. All of them died around the twelfth day.

Intravenous Injection of Congo Red.—Schönberger and Rosenblatt confirm to the fullest extent the value of Bennhold's method for diagnosis of amyloidosis. In such patients, 40 per cent. of the dye disappears from the blood within an hour (against 11-29 per cent. in normal subjects). The dye disappears equally rapidly from the blood in nephrosis, but in the latter case it appears in the urine within half an hour.

Zeitschrift für Tuberkulose, Leipzig

43: 169-264 (Sept.) 1925

The Constitution and Tuberculosis. C. Coerper.—p. 169.
Paths of Infection in Tuberculosis. Lange.—p. 176. Reply. Beitzke.—p. 183.
Classifications of Pulmonary Tuberculosis. Kaufmann and Beltz.—p. 184.
*Cellular Reaction to Injection of Tubercle Bacilli. N. L. Jiwago and W. A. Lubarski.—p. 185.
*Complement Fixation and Bacteriology of Exudates. K. Michailow.—p. 191.
Inhalation Treatment. H. Beckmann.—p. 197.
Preventive Tuberculosis Vaccination in Rabbits. Arima et al.—p. 201. C'td.
Tuberculosis Mortality in Lithuania. L. Kogan.—p. 216.

Cellular Reaction to Injection of Tubercle Bacilli.—Jiwago and Lubarski injected tubercle bacilli into the peritoneal cavity of mice and guinea-pigs. The exudate contained polymorphonuclear leukocytes, lymphocytes and large mononuclear cells—probably histocytes. The latter increased in percentage and developed a phagocytic action. The polymorphonuclears acted in the guinea-pigs only as microphages. The lymphocytes seemed to be passive.

Complement Fixation and Bacteriology of Exudates.—Michailow had excellent results with complement fixation in tuberculous exudates, using Besredka's antigen. The mere cytologic picture is not reliable.

Zeitschrift für Urologie, Leipzig

19: 721-800, 1925

Shorter Lamps or Cystoscopes. R. Jahr.—p. 721.
Diverticula of the Bladder. H. Jarosz.—p. 722.
*Sexual Neurasthenia and Colliculitis. Orlowski.—p. 734.
The Female Urethra and Prostate. O. Sachs.—p. 739.
The Ureter Reflux. G. Praetorius.—p. 743.
The Spermatozoa. M. Porosz.—p. 752.
Decapsulation of the Kidney. C. H. Lasch.—p. 768.

Sexual Neurasthenia and Colliculitis.—Orlowski admits that sexual neurasthenia is not caused by changes of the verumontanum. Yet he is convinced that one form of impotence is due to this. It begins with ejaculatio praecox, while the libido is normal or even increases (in contrast to the endocrine type). After a few years (average eight) the erections become weaker. These symptoms are associated with a chronic hypertrophic inflammation of the urethra between the bladder and the verumontanum, which causes a repeated mucopurulent discharge, frequently mistaken for a postgonorrheal process. A feeling of unfinished micturition, with the spreading of discomfort to the fossa navicularis, is another symptom. The local changes are more difficult to diagnose. He found that these patients are free from neurasthenic symptoms—in spite of their irrational sex life. He thinks that the impotence in these cases is a protection of the spinal cord against the repeated injuries from coitus interruptus and similar acts. The colliculus serves as a buffer station. The other type of protection of the spinal centers is obtained by neurasthenia—the group without colliculitis. He believes that this protective action has become necessary because of the increasing influence of the brain cortex over the originally automatic—and consequently purely egoistic—sexual function. He emphasizes that a natural, primitive man would not flatten and prolong the automatic

and egoistic curve of the sexual act for the benefit of his partner. This danger occurs only in the already physically declining civilized man, and especially with the predominance of the woman. He recommends local treatment, although he admits that it acts partly and sometimes exclusively as psychotherapy—just like any other treatment.

Zentralblatt für Chirurgie, Leipzig

52: 2337-2400 (Oct. 17) 1925

Exarticulation in Hip Joint. V. Sanchis Perpina and R. Díaz Sarasola. —p. 2338.
*Bile Cyst After "Ideal" Cholecystectomy. E. Pólya.—p. 2341.
Integral Treatment. J. A. Goljanitzki.—p. 2344.
Intestine Disturbances After Laparotomies. E. Liek.—p. 2347.
A Rubber Drain. H. Busse.—p. 2348.
Blocking the Brachial Plexus. H. Hilarowicz.—p. 2349.
A Sound to Aid in Ligating. L. Biener.—p. 2352.

Bile Cyst After "Ideal" Cholecystectomy.—In Pólya's case a cyst containing bile and compressing the common bile duct developed after cholecystectomy with primary suture of the abdominal wall. The grave jaundice disappeared after drainage.

Zentralblatt für Gynäkologie, Leipzig

49: 2289-2320 (Oct. 10) 1925

*Pregnancy Kidney and Nephritis in Pregnancy. T. Heynemann.—p. 2290.
Pyelography in Gynecology. F. Burgkhardt.—p. 2296.
Injury of the Urethra in Childbirth. A. Baidin.—p. 2299.
Küstner's Operation for Fistula. P. Garfunkel.—p. 2307.

Pregnancy Kidney and Nephritis in Pregnancy.—Heynemann finds that the diagnosis of nephritis is made too often in pregnancy. If the symptoms appear in the second half of pregnancy, a "pregnancy kidney" is more probable. High blood pressure, erythrocytes in the urine, oliguria and retinitis do not exclude it. The chemistry of the blood is more important from this standpoint: He never saw more than 60 mg. of residual nitrogen per hundred cubic centimeters of blood in nephrosis gravidarum. Oliguria speaks for true nephritis only when associated with low specific gravity. A history of nephritis (except in former pregnancies) speaks for true nephritis.

Zentralblatt für innere Medizin, Leipzig

46: 969-1000 (Oct. 10) 1925

*Is There a Panacea for Cancer? A. Greil.—p. 970.

Is There a Panacea for Cancer?—Greil points to the striking analogy between cancer and pregnancy. It is remarkable that the progeny in certain viviparous nematodes completely destroy and incorporate the mother's body. Like the embryo, the cells of the tumor acquire their full malignancy by growing. There can be no panacea for cancer. Every case is different. He adds that benefit might result from various procedures, such as calcium chlorid, arsenicals, epinephrin, local injection, etc. He points to Strauss' case of regression of an inoperable cancer of the breast after the patient had poisoned herself with morphin and had slept for ten days. The inanition may have played some part in the case.

Časopis lékařů českých, Prague

64: 1465-1500 (Oct. 10) 1925

Origin and Growth of Loose Bodies in Joints. Brezovnik.—p. 1465. C'td.
Diagnosis of Active Tuberculosis in Children. V. Dvorský.—p. 1469.
Sarcoma of the Pelvis. Saidl.—p. 1473.
*Rhabdomyoma in the Fetus. G. Procházka.—p. 1476.
The Wassermann Reaction in Obstetrics. G. Bazala.—p. 1480. C'cn.
*Tuberculous Peritonitis. I. Stratil.—p. 1486. C'cn.
Prosopothoraco-Omphalopagus from Eighth Week of Pregnancy. F. Horálek.—p. 1490.
*Action of Insulin in Strychnin Spasms. F. Karásek.—p. 1491.

Rhabdomyoma in the Fetus.—Procházka observed multiple rhabdomyomas in the cervical muscles of a 6 months old fetus from a cow.

Roentgen-Ray Treatment of Tuberculous Peritonitis.—Stratil had fair results with roentgen-ray treatment in seven of eight cases of tuberculosis of the peritoneum.

Action of Insulin in Strychnin Spasms.—Karásek found that frogs injected with insulin recovered from strychnin poisoning much more rapidly than the controls. Yet when he used insulin after the beginning of the spasms, the frogs died while the controls recovered.

Acta Pædiatrica, Upsala

5: 1-222 (Oct. 22) 1925

*Prevention of Rickets. I. Jundell.—p. 1.
*Rickets and Craniotabes. J. A. Höjer.—p. 16.
Weight of Infants at Stockholm. J. A. Höjer.—p. 59.
*Phosphate Tetany. K. O. af Klercker and M. Odin.—p. 79.
Various Tuberculin Tests. H. R. Krogsgaard.—p. 103.
*Spasmophilic Pseudopertussis. W. Wernstedt.—p. 126.
Obliterating Endophlebitis of the Liver. E. Böttiger.—p. 144.
*Choking from Hypoplasia of the Mandible. E. Lenstrup.—p. 154.
*Scarlet Fever. I. Jundell.—p. 166.
*Calcium Dialysis from Milk. Y. Zotterman.—p. 180.
*Fat Absorption and Calcium Metabolism in Prematurely Born Infants. G. Muhl.—p. 188.
Correction. G. Muhl.—p. 224.

Prevention of Rickets.—Jundell submitted prematurely born infants—the surest candidates for rickets—to a preventive course of treatment with ultraviolet rays, phosphorus and cod liver oil, or yolks. All of these three methods, applied early and for a long period, seemed to be equally effectual in preventing the disease.

Rickets and Craniotabes.—Höjer concludes from the literature and his seventy cases of craniotabes, that the condition is not due to rickets in the majority of cases. A constitutional thinness of the bones of the skull may be the cause.

Phosphate Tetany.—Af Klercker and Odin found that the tetanigenic action of phosphates depends on a lowering of the blood calcium—not on an increase of the bicarbonate content of the blood. The threshold of the action is lower in spasmophilia—probably because of the disturbances in the regulation of the blood calcium in spasmophilia. Potassium phosphate has an added stimulating action of the potassium ion. There is no definite relation between the increase in the blood phosphates and the decrease in calcium.

Spasmophilic Pseudopertussis.—Wernstedt's patient had attacks resembling whooping cough in every respect. Yet the child had had pertussis six months before, and the attacks were controlled by calcium, and reappeared when the calcium treatment was discontinued. Another child presented the syndrome whenever it was given whey.

Choking from Hypoplasia of the Mandible.—Lenstrup reports three cases of violent attacks of suffocation in infants, caused by deficient development of the lower jaw, and consequent falling back of the tongue. Cleft palate was present in all of them. Fastening in the child with pillows, so it lay on side and face, prevented the choking attacks, which might otherwise have proved fatal. As the child developed, the tendency was outgrown.

Scarlet Fever.—Jundell had negative results with cutaneous, subcutaneous and pharyngeal inoculations of Berkefeld filtrates from tonsils extirpated in scarlet fever. He prepared a toxin from streptococci, but found that the dilution recommended by the Dicks was usually too weak. When using 0.2 c.c. of a 1 per cent. dilution for the Dick test, he found frequently a positive reaction in scarlet fever patients and convalescents. He had occasion to make the test on 545 Swedish marines. Among them, 111 gave a positive reaction. An epidemic of twenty three cases occurred on their ship; twenty-two of these had been Dick-positive and a mistake, he admits, might have occurred in the one listed as negative. This and his other experiences demonstrated the specificity of the Dick test. He remarks that the difficulty of getting sufficiently toxic filtrates may account for the uncertainty of some reactions.

Dialysis of Calcium from Milk.—Zotterman found that an addition of about 50 per cent. of a decinormal solution of hydrochloric acid is necessary to obtain a complete dissociation of calcium in cow's milk. An addition of 10-15 per cent. is sufficient with human milk, because of its lesser amount of buffer substances. He believes that this accounts for the delayed evacuation of cow's milk from the stomach of infants. The strain on the secreting apparatus is four or five times greater with cow's milk.

Fat and Calcium in Prematurely Born Infants.—Muhl found that the lesser absorption of fat in premature infants is only proportional to their lower weight. The retention of the calcium is good, but may be easily deranged by overfeeding.

Hospitalstidende, Copenhagen

68: 769-792 (Aug. 20) 1925

*Loose Bodies in Joints. H. Mathiesen.—p. 777.

Loose Bodies in Joints.—Mathiesen compares the different theories on the etiology of osteochondritis dissecans. He is inclined to accept Bentzon's assumption that a callus-like tissue develops on the basis of a circumscribed hyperemia, the result of traumatic paralysis of local vessels. The injury may be too slight to be recognized as trauma. He describes the case of a young man who seemed to have a constitutional predisposition to production of loose bodies in joints. He was in the hospital five times in seven years for removal of the loose bodies in knees or elbows. Recent roentgenograms show typical osteochondritis in one knee, relics of an old similar process in one elbow, and the findings in the other knee and elbow are suggestive of the same. Nine roentgenograms of this and other cases are reproduced, some showing the predisposing arrangement of the arteries. Removal of the loose bodies is imperative.

68: 793-816 (Aug. 27) 1925

*Acidosis Treatment of Infectious Processes in the Urinary Tract. A. H. Johansen and E. Warburg.—p. 793. C'cn.
Fat and Cholesterol Content of the Blood in Rabbits with Artificial Nephrosis. H. I. Bing et al.—p. 804.

Acidosis Treatment of Infectious Processes in the Urinary Tract.—Johansen and Warburg aimed to render the urine acid in twenty-one cases of this kind, including eighteen cases of colon bacillus pyuria. Calcium chlorid or ammonium chlorid was the main reliance. Twelve of the patients recovered completely under this treatment. It is based on the assumption that the p_H controls the growth of bacteria. Only four patients failed to show benefit, and the inadequate doses explained the lack of success in two of these cases. The third case was a proteus infection. Five patients had no further symptoms but the urine was not sterile. Even if bacteria should be found in the urine on reexamination later, in the apparently cured cases, this may be due to new infection, instead of recurrence, the original source still active. They warn that this therapeutic acidosis should not be attempted if the kidneys are pathologic or there are signs of diabetes. Otherwise there do not seem to be any contraindications. Some patients were nauseated by the drug and a few developed diarrhea. The p_H is tested at the bedside with the Sørensen colorimeter and Cole's comparer. The details of the twenty-one cases are given in full. The usual dose of calcium chlorid was 9 gm. daily, fractioned, in 2 liters of water. Tube casts may appear under this treatment, but this is a transient phenomenon.

Hygiea, Stockholm

87: 721-752 (Oct. 15) 1925

*Achylia Gastrica. H. Öhnell.—p. 721.

Prognosis and Treatment in Gastric Achylia.—Öhnell obtained a positive congo red reaction in forty-three cases with a history of gastric achylia on previous examinations, but the test was negative in 152 cases (22.3 per cent. transient and 78.6 per cent. permanent achylia). His analysis of 419 cases of gastric achylia justifies the assertion that even the repeated determination of achylia over periods up to six years does not necessarily mean that chronic gastritis has definitely annihilated the secretion of hydrochloric acid. The achylia may be merely a secretory neurosis, and this may subside in time. The average age in the transient cases was 39.9 years (one patient under 20), and 44.6 in the permanent cases. Of the twenty-two treated achylic patients less than 30 years old, thirteen presented later the congo reaction again. This unexpectedly large proportion of cured cases teaches the importance of early recognition and treatment of gastric achylia. He warns against the danger of giving hydrochloric acid routinely without accurate knowledge as to the exact conditions in the stomach. In three of the cases, a gastric or duodenal ulcer developed during the strong hydrochloric acid treatment, with persisting achylia. He adds that certain patients show a lack of secretion of gastric juice with a test breakfast while there is no evidence of achylia with a test meal including meat. These test-breakfast achylia patients should be advised to refrain from pure carbohydrate meals. One practical conclusion of the research reported is the advisability of keeping stomach tube control of achylia patients, and training patients to submit to it more readily, especially the young.

Ugeskrift for Læger, Copenhagen

87: 841-862 (Sept. 24) 1925

*Diagnosis of Inflammatory Exophthalmos. H. Rønne.—p. 841.
*Sciatica. H. Jansen.—p. 845.
*Hernia as Sign of Cancer. Biilmann.—p. 847.
*Genius Epidemicus in Denmark. A. Magelssen.—p. 848.
Age of Gallstones. S. Hansen.—p. 850.
The Pellagra Question. M. Hindhede.—p. 853.

Diagnosis of Inflammatory Exophthalmos.—Rønne discusses the points differentiating subperiosteal abscess, orbital thrombophlebitis and lesions in Tenon's capsule from collateral orbital lesions induced by pathologic conditions outside the orbit proper. Each requires a different treatment. He has had four cases under observation in which erysipelas of the face had caused bilateral exophthalmos. Some recovered under incision and some without surgical intervention; in the latter case enophthalmos developed later, probably from cicatricial retraction in the orbit. He always found pus when he incised. In three of his four cases the orbital lesions were initiated with a superficial, necrotic abscess in the eyelid. He warns to suspect an orbital lesion with an eyelid abscess; prompt incision may abort the whole. Inflammatory edema of the capsule of Tenon has no characteristic symptoms except their mildness, their connection with rheumatic disturbances elsewhere, and the fact that it sometimes develops on both sides and generally accompanies or follows disturbances in the uveal tract.

Sciatica.—Jansen relates that in 42.5 per cent. of his 200 cases of sciatica, traumatic lumbago had preceded the sciatica, and he is convinced that overstrain of the lumbar or gluteal muscles, some sudden and extreme effort or prolonged strain, is responsible for the initial myalgia. Chilling predisposes to it. He treats sciatica on this etiologic basis, supplementing bed rest and local heat with vigorous massage of the lumbar and gluteal muscles. This cured completely 58 per cent., and 36 per cent. were much improved. Only 2.5 per cent. proved refractory, and these all showed the imprint of a traumatic neurosis.

Hernia as Sign of Intra-Abdominal Cancer.—Biilmann regards the development of a hernia or exaggeration of an existing hernia at the cancer age as a sign of augmented intra-abdominal pressure, suggesting the possibility of insidious intra-abdominal cancer. The tumor sometimes can be palpated in the hernia region, when it escapes palpation at all other points. In some typical cases described, the hernia had been kept under control for years but then became irreducible, and the course of the case confirmed the malignancy.

Genius Epidemicus in Denmark.—Magelssen compares the death rate with the temperature record in Denmark from 1801 to 1920. The mortality is high with low temperatures and low with high temperatures. This is most evident when ten year periods are compared, as conditions leading to death are often at work before the year in which death occurs. The averages of health, sickness and death parallel the external temperature curve, seemingly unmodified by our human institutions, treatment, hygiene and bacteriology. This is Magelssen's sixth communication on comparison of the meteorologic records with the death rate in different countries and cities.

87: 865-880 (Oct. 1) 1925

*Is the Glucose in the Blood Free or Bound? C. Lundsgaard and S. A. Holbøll.—p. 865.

The Glucose in the Blood.—Lundsgaard and Holbøll describe research which shows that the glucose in the blood of normal subjects and also that of diabetics passes through a collodion membrane in apparently exactly the same way. This demonstrates that the glucose is in a free, crystalloid and diffusible form.